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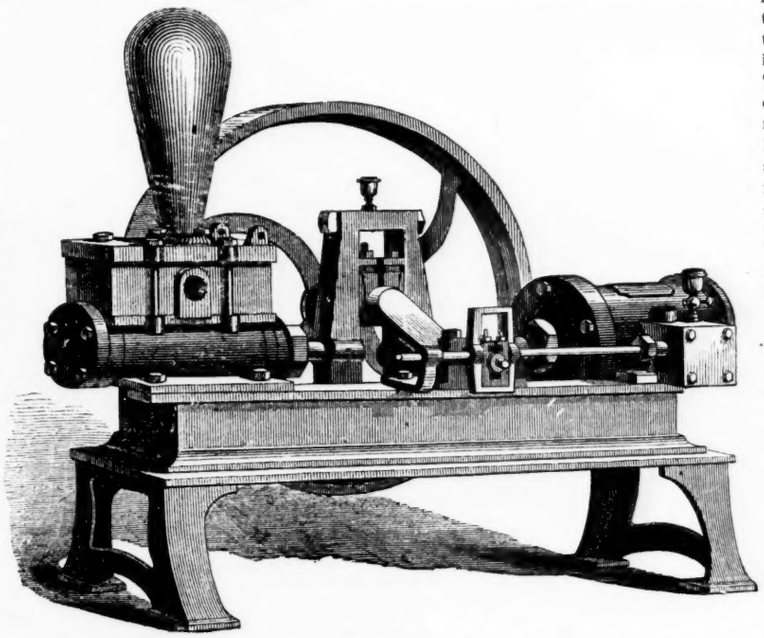
STEAM PUMPS.

Continuing our illustrated descriptions of Steam Pumps, we present this week a cut of the new steam pump, hand pump and steam engine, designed and patented by James Clayton, of 102 Front street, Brooklyn, which is certainly worthy the attention of parties needing pumps, whether for mining or domestic purposes. From the large number of steam pumps now in use, it would seem at first sight almost a waste of time and money for any person to attempt to force upon the market a new pump—and such an one, to succeed, must have superior merits. Fortunately for inventors, nothing that has yet been made is so perfect but what something can be devised still nearer perfection. In the construction of this particular pump, the inventor has kept in view a few leading ideas, viz: that there was need of a pump, access to every part of which could be easy, so as to enable any one to take it to pieces in a very short time, and that very little room should be taken up by it. These ideas he believes he has followed to the letter, and there is no doubt that he has succeeded. The patent sliding journal box and guides, by which the valves are kept in a straight course without wear on the pistons and rods, are excellent features. The water-valve arrangement is also very good, as by simply taking off the cover of the water-valve chest, the four valves are at once under the engineer's eye, and any one (or all) of them may be thrown back on its hinge or taken out and put in again in a few seconds. The simplicity, strength and dura bility of this pump are claimed to exceed those of any other. As to its compactness there can be no doubt. The inventor claims that, besides other advantages already mentioned, his steam pump and hand pump are the most desirable kind in case of fire, because of the large amount of water they throw; that they have a longer stroke than that of any other Steam Fly wheel Pump; and that with his yoke arrangement, he can run the piston within the smallest distance of the cylinder covers, which position they always keep, as the patent sliding journal boxes wear equally on both sides of the crank pin.



CLAYTON'S STEAM PUMP, HAND PUMP AND STEAM ENGINE.

More about Bessemer Steel.

The success of the Bessemer process in Great Britain is producing a marked effect upon the importation of foreign iron into that country. When the process was first introduced, several experiments resulted in decidedly ill success, the effect of which on the minds of the steel makers was, however, soon dissipated when the better qualities of pig iron from Sweden, were used. It was found afterwards that the English hœmatite ores of Ulverstone and Cleator are quite as good as the Swedish hœmatites, and when smelted with the coke of Yorkshire and Northumberland produce a pig iron applicable to the Bessemer process. The consequence of this success is that the importation of steel-iron has fallen off every year since 1860, although the export of iron, and manufacture and export of steel, have largely increased. Mr. Bessemer, it is stated, is receiving £2,000 per week in patent royalties. Several changes are being introduced into the manufacture of Bessemer steel, and the amount of the charge in the converter is being everywhere increased. Messrs. Brown & Co.'s new converters are made for ten tons, and it is even stated that at some French works the charge has been increased to fifteen tons. The purely Swedish fashion of using spiegeleisen is even in Sweden, and especially in producing the softer sorts of Bessemer metal, getting more and more out of use. Instead of this the same metal, which has run into the converter at the beginning of the charge, is used, and is found to answer the same purpose. Mr. Hall, at Gratz, now works without using the foreign spiegeleisen. The process is conducted in the usual way adopted in England. In running out the metal, two paper packets, containing charcoal powder, are thrown into the ladle, and when it is full a shovelful of this powder is thrown on the top of the metal. The produce of pure ingots is not less than 80 per cent. of the raw material. The greatest hindrance to the success of the Bessemer process is the presence of phosphorus in the pig iron. It used to be thought—though later investigations have refuted the notion—that .05 to .06 per cent. is not injurious. But a pig iron which, in spite of its containing phosphorus, makes a faultless wrought iron, nevertheless affords by the Bessemer process a product "cold-short" in the highest degree. The reason is that by the old method the separation of the phosphorus takes place during the refining in the first melting, and goes off with the slag then formed. In the Bessemer process, on the contrary, the phosphorus which is oxidized, but not separated, at the first stage, is again reduced in the last stage, under the higher temperature, and unites with the refined metal.

Granulation of Blast-Furnace Slags.

For the past two years the granulation of blast-furnace slags has been successfully accomplished in France, the whole of the inconvenience usually arising from the accumulation of masses of vitreous matter being thus avoided. The slag is simply permitted to run into water instead of running upon the ground as usual. The water used is the waste from cooling the tuyeres, &c. A suitable pit is formed to receive the water, and the molten slag is run through a gutter into it—of course, becoming finely divided and friable. The slag-sand is raised by an endless chain of buckets, and removed in carts, or otherwise. It is useful for making mortar and silicious bricks, as well as for agricultural and a variety of other purposes. The invention of the process is due to Mr. Minary, and may be seen in use at the works of the Franche-Compte Forges Company, in the department of Jura. The sands vary in color from dingy-grey to dark brown or black, and weigh about 1200 killogrammes the cubic metre.

Effect of the War upon the Coal Supply.

It is stated that a note-worthy fact in connection with the war in Europe, that all the countries engaged have increased their supply of coal to an enormous extent. Italy has been importing coal lately in such large quantities, that vessels to carry it can scarcely be found. All this is for the Italian navy, and Austria, Prussia, Russia and France are also gathering together enormous supplies of coal.

The Age of the California Auriferous Rocks.

The San Francisco *Bulletin* having recently given to Professor Blake the credit of having first determined the age of the gold-bearing rocks of California, Professor Gabb, of the State Geological Survey, replies as follows: "It is not known who was 'the fortunate individual to whom it was granted to notice the first specimen of fossils that might determine the age of the rocks.' The first specimen which came under our observation was an Ammonite, which was found at Spanish flat near Coloma by a miner named Smith, and presented to Hon. John Conness, and by him given to Dr. J. B. Trask in 1854. The next specimen in the order of time, of which we have any knowledge, was also an

Ammonite, found in place at the mouth of Mormon Creek, Calaveras county, by Alfred Frick. Both these specimens have been at the office of the Geological Survey since 1861. They were sufficient to render extremely probable the existence of secondary rocks among the gold-bearing slates of the Sierra Nevada, and this probability was frequently spoken of at the office of the survey and communicated to Professor Dana, Mr. Meek and other distinguished geologists at the East as early as September, 1863. Discoveries of secondary fosslis, *in place*, in the auriferous rocks of the Sierra Nevada were made by the Geological Survey, at several different localities, in 1863, and in January, 1864, the localities (three in number.) of Jurassic fossils on the Mariposa estate were discovered by Mr. King of the Survey. On the strength of all the evidence collected by the Survey, up to that time, the announcement was published in the *American Journal of Science* for August, 1864, of the secondary age of a large portion of the auriferous rocks of the Sierra Nevada ; and this was the first published announcement of this important fact, and was issued at least three months before Professor Blake visited Mr. King's locality, the discovery of which he claims as his own. A statement of the discovery of fossils on the Mariposa estate and of their geological age and importance was also published in the Preface of the *Palaeontology of California*, Volume 1, which was printed in September, 1864. Mr. King also revisited the place and made extensive collections, including all the species which have ever been found there. This was all done before Professor Blake ever saw the locality in question. Thus it will be clearly seen that Professor Blake was not the first person to see fossils from the auriferous slates of the Sierra ; that he did not discover the locality on the Mariposa estate, and that he was not the first person to announce the secondary age of the rocks of the Sierra Nevada, either as a whole or of any portion of them. It may be added, that of between twenty and thirty localities of secondary fossils known to exist among the auriferous rocks of the Sierra, all but two or three were first found by members of the Geological Survey, and that Professor Blake has never discovered any locality of such fossils himself, or published any thing of the slightest value to the geologist as evidence in regard to the age of the rocks in question."

New Iron Preserver.

Dr. Henry Edward Francis de Briou, a Parisian physician, who for many years has resided in England, has discovered and patented a process for preparing from india-rubber what we may designate an enamel paint, which is absolutely proof against the action of the atmosphere, as well as against the power of all liquids (including the most potent acids) to affect iron. This enamel paint possesses all the remarkable qualities of india-rubber, without combining with them any other substance or element that is calculated in the slightest degree to counteract their thoroughly efficient operation. The preparation is applied cold and in a liquid state, and in consistency and general appearance it resembles such common oil-paint as is ordinarily used for iron-work. It may be applied with ease, but of course it is necessary that the process for application should be conducted with such care as will ensure a complete covering of the surfaces to be protected. This covering may be so thin that its presence cannot be detected, while it leaves the protected surfaces in all their original sharply defined fseshness. It hardens also at once, and immediately forms a smooth and lustrous enamel-like covering, air-proof, damp-proof, water-proof, and acid-proof. Thus protected the iron is safe. Rust cannot accumulate upon the surface of this enamel-paint, nor corrode beneath it.—*Art Journal*.

Oxalic Acid from Sawdust.

A mixture is first made of one part caustic potash and two parts caustic soda at 37° Beaumé. Thirty to forty parts of sawdust and one hundred parts of the above lye are thoroughly stirred on iron plates, at 392° Fahrenheit, until it forms a dark brown mass, containing one to four per cent. of oxalic acid and one-half per cent. of formic acid ; it is then dried on iron plates. The product contains twenty-eight to thirty per cent. of oxalic acid and a trifle more formic acid than before : it is washed out with water at 60° Fahrenheit ; the oxalate of soda converted into oxalic of lime and the oxalic acid separated from the lime by sulphuric acid. One hundred parts of sawdust yields fifty parts of oxalic acid. A pound of oxalic acid requires forty pounds of fuel in its preparation, and costs about eighteen cents.

Manufacture of Iron.

An invention has been provisionally specified by Mr. W.W. Biggs, of Paris, which has for its object improvements in the manufacture of iron when hematite ores are used, and consists in pulverising the ore, washing away the impurities, and then forming the cleaned ore into lumps, lime or cement being used to produce adhesion. The lumps are broken up, and introduced into the furnace in the usual manner.

Mining Summary.

California.

Nevada.—The mining interests of this county, says the *Transcript* of June 27th, are being developed with astonishing rapidity. It is without doubt to-day the richest mining county in the State, destined to play a most important part in the financial prospects of California, as well in those of other portions of the Union. The people of the county are displaying considerable energy themselves in bringing the value and richness of the mines to the notice of the public, and the immense amount of capital that has been invested during the last two years is evidence that their efforts have met with success. The richness of the quartz mines of Nevada county is not confined to any particular locality, but the deposits of the precious metal permeates to the length and breadth, while its cement and gravel mines are rich and valuable to a fabulous degree. Labor, energy, perseverance and capital, have served to establish the reputation of California at home and abroad. Notwithstanding the immense amount of work already done, prospects made, and ledges opened up, there is yet an immense tract of unexplored ground, equal to any already discovered. . . . . H. Schardin and others have found good work at Newtown, within four miles of Nevada City. Two companies on the new lode propose to put up machinery at once. . . . . The same paper says : We learn from good authority that three sets of claims in this county have been sold during the past week, the first $450,000, the second at $200,000, and the third at $180,000. . . . . The editor speaks of a recent visit to the Eureka Mine and mill, owned by the Watt Brothers. The mill is run by a forty-horse engine and has sixteen heavy stamps. The quartz, after passing under the stamps, is run over blankets, upon which the sulphurets, sand and gold collects. These blankets are taken up and washed in vats every few hours. The pulp is then placed in a feeder and run through the amalgamator. This consists of a riffled trough, in the bottom of which is a semi-cylinder supplied with iron teeth. In this a cylinder, armed with teeth, revolves rapidly. The action of these teeth separates the pulp and renders it easier to catch as it passes over the riffles filled with quicksilver below. The skimmings—from sulphurets—which are so light as to float, are taken from the surface of the water and ground in pans. The heavier sulphurets and sand are run through sluices into vats. At the back part of the mill are two long wooden troughs or shaking tables, upon which the sand and sulphurets are separated. The latter are worth about $400 per ton, and are shipped to Swansea to be worked. At the hoisting works, two engines, a forty and a ten horse power, are used for hoisting and pumping. The shaft is down three hundred and twenty-five feet below the surface, and at the foot of the incline the lead is seven feet wide. The company is working about fifty men on a shift, and is running day and night. Recently a number of new pans and grinders have been tried in the mill, but with no satisfactory results. The mill is an excellent gold-saver, as it is, but the owners are satisfied that they are losing a great deal of gold. They think, and rightly too, that the way to test the numberless pans now being brought to the notice of miners, is to place them at the outlet of the mill and see how much they can catch of the gold now being lost. Machinery is needed now for catching what miners are loosing, and whoever can produce such has a sure fortune. The Eureka is one of the best mines in the county, and under the excellent management of the present owners, is paying immensely. We were shown by Mr. Watt the result of the last run of twelve days, in retorted gold and amalgam—worth $31,500. This is about the average of runs made at the Eureka mill. . . . Some specimens were brought to this city a few days since, which were taken from the Enterprise ledge, located about four or five miles above Omega, in this county. The rock is filled with very handsome looking sulphurets, and lots of free gold is scattered through it. The ledge is of good size, and well-defined, and we have no doubt that the owners thereof will make their fortunes out of it. . . . The *Gazette* learns that a quartz ledge of astonishing richness was discovered and located last Friday by W. J. Worley, of Columbia Hill. The ledge is situated on Grizzly Ridge. The vein is about twenty inches in thickness, and has been traced for nearly a mile. Many extensions have been taken up. Specimens in the possession of the discoverer, which were broken from the croppings, are literally bespangled with gold ; in fact, some of them contain more gold than quartz. Worley and his partners have located sixteen hundred feet, and call their claim the "Big Slide." . . . The *Union* says : We saw some rock yesterday from the Lowery Stockton lead, taken from a depth of sixty feet below the surface. The claim is located near the Globe ranche, on the Auburn road. The rock was very rich in gold and sulphurets—the gold largely predominating. The ledge varies from six to sixteen inches in thickness. The owners intend putting up a five-stamp battery this summer. . . . . The *National* speaks of a prospect just taken from four ounces of rock, from the Minnesota ledge, located opposite Snow Point. From four ounces a dollar and a half in pure gold was taken. . . . Within the past few weeks some of the most extensive mining enterprises ever projected in the State have been inaugurated in this county. For a month or more S. N. Stranham has been engaged in tracing out the great Blue lead, and has come to the conclusion that the main channel in this county runs under Chalk Bluff ridge. Accordingly, he has made a location extending a distance of nine miles. He is associated with some San Francisco capitalists. The compauy is known as the "Chalk Bluff Mountain Blue Gravel Company." Another company have made a location of ten miles, under the name of the "Ancient River Channel Blue Gravel Mining Company." The claim is 52,800 feet in length, and 1,056 names were used in making the location. The lead has been traced the entire distance of the two locations. As soon as the necessary arrangements can be made, machinery will be put up at the lower end of the claims, at Chalk Bluff, also at the dividing line between the two claims and shafts or inclines sunk to the bed rock.

Placer.—The *Herald* correspondent writing from Soda Spring Valley, says :—"Several parties on prospecting tours visited Soda Spring Valley within the past few days, from Meadow, Lake Mountain City, and Virginia City, pronouncing the prospects far better than at Meadow Lake or the above-mentioned mining districts. The most prominent ledges are the Granite, the American, Pittsburg and the Cataract. The Silver Dip and Golden Dip Deerlick ledges, discovered a few days since, are very rich in appearance. Several companies are busy now doing necessary work, prospecting, etc. Several tons of rock is being taken to Summit City or Meadow Lake by parties, intended to be crushed. * * * Soda Spring Valley is located at the head of the North Fork of the American river, six miles south of the Dutch Flat wagon road, ten miles west of Lake Tahoe, and fifteen miles south-easterly from Meadow Lake. . . . We mentioned a fortnight ago that some very rich float rock had been found on Anthony Flat, near Newcastle, and that parties were looking for the ledge. They found it on Saturday last, and located a number of claims under the name of the "Pepper and Salt Company"—the name being derived from the appearance of the rock. We should think, from what prospects we have seen obtained from small pieces of the rock, that it would pay from $2,000 to $5,000 per ton in free gold. It contains no sulphurets, so far as ascertained.

Calaveras.—The *Courier* says :—"The Buckfield Copper Mining Company have struck a vein of copper six inches wide, producing 20 per cent ore. McGlynn's quartz mill, near San Andreas, has been engaged in crushing 500 tons of tailings, which have yielded satisfactorily. The mill will soon commence on quartz from Mr. McGlynn's lead. . . . . B. K. Thorp & Co. are developing a promising lead in Rich Gulch, from which they have recently taken some very rich quartz. . . . . Austin & Hathaway are the owners of a lead at Jenny Lind about 30 feet in width, which yields from $10 to $40 to the ton. We understand that this claim is about to be sold to parties in San Francisco, for the sum of $75,000. . . . . A new quartz lead has recently been discovered near Angels, in this county, the rock from which is said to yield nearly $1,000 to the ton. . . . . 100 tons of rock from the claim of Dr. Lampher and others, near Mokelumne Hill, yielded $1,500. . . . . The Rawhide claim is said to be paying handsomely. The first rock crushed in the new mill yielded $40 to the ton. . . . . The Alban ranch mill is again in operation. The rock being crushed is from the Alban ranch mine. . . . . The Willow creek lead, near San Andreas, is said to be several feet wide, and very rich. . . . The *Register* says : "We saw one day last week some of the richest specimens of quartz taken from the Altaville quartz claim, located near the town of that name, than has ever been found in this county. . . . . Mr. Irvine is pushing on the work in the El Dorado quartz mine, near El Dorado camp, and taking out a large amount of rock for crushing as soon as he shall have erected his mill. He is now down with the incline shaft about 150 feet. The vein is at that depth over six feet wide, well defined, solid quartz. The rock which he is now taking out prospects well, but it is not as rich as some that has been taken out.

Shasta.—According to the Red Bluff *Independent* a new mining district, known as Piety Hill, has been located about 40 miles from the town of Shasta. The *Courier* says : The Bunker Hill company have struck a good prospect again, but in rock more solid than formerly, so as to necessitate crushing. A pan and a half, crushed in a mortar last week, paid one and a half ounces. They will haul a few tons to the Spring creek mill to be crushed. . . . . Hall & Co.'s new quartz discovery near Hogtown, is receiving considerable attention. Specimens from the lode are showing better and better. . . . . Reports from the Potosi are very flattering. Every piece of rock now shows free gold. . . . . Kelly is putting up a small mill on the Jollie lode. Will be ready to run in a couple of weeks.

Alpine.—The *Miner* of June 16th states that on the previous day, the Morning Star company struck ore in their drift similar in character to that in the tunnel, and feel confident they are nearing the other chimney for which the chimney was started. They will probably put up reduction works soon. . . . . Work on the Eastern Slope tunnel is now going on uninterruptedly, and the superintendent says will be continued until that monster ledge is fully proven.

Tuolumne.—From the *Courier* of the 16th ult., we learn that the Mount Vernon company in Sugar Pine, commenced crushing their rock at the Monitor mill, which they have leased. Twelve tons were worked as a test, and yielded about $108 per ton. . . . . Another golden stream has flowed from Bald Mountain. Some miners took out about fifty pounds of gold from a claim that had been given up in disgust, some years ago. There is no hill in the State that has yielded so much treasure, though comparatively little work has been done on it.

Fresno.—We see it noted in the San Francisco papers that the steamer Fresno had arrived with 4,500 lbs. copper from Fresno City.

Colorado.

From the Black Hawk *Journal* we learn that the Keith mill, largely improved and added to, started July 2nd. There is at last a furnace which is believed to be right. The desulphurized material is blown aloft for burnishing instead of being carried up by an elevator. The burnishing machinery has been more than doubled in capacity. Four shaking tables have been added to the four in former use, and sheet copper for four more is on the way out. The new upright stack, although not carried to the full height for want of brick, furnishes ample draft. It will probably take a few days to get everything running smoothly, when we expect regular and steady results in gold from the Keith mill. . . . . Col.

Tannatt has at last struck bottom at the Rocky Mountain mill. It seems that Mr. McClellan built his mill and engine house on an old shaft, the exact location of which was unknown to him. It has been an awful job to build over a portion of the engine-house walls, to shore up the corner of the mill, and prepare to put under a solid foundation. As soon as the engine and pump can be set up mining will be commenced, the Colonel having the permission of the company to take out at least one hundred cords of ore before touching the mill further. . . . We hear that the Sierra Madre crushing and dressing works started up July 5th. The latter are a *fac-simile* of those in the Hartz Mountains, where the art has been carried to absolute perfection. Smelting is to furnish the treatment, and for that the furnaces are not yet built. . . . . Capt. Hall of Boston has commenced mining in the Virginia lode in Chase gulch, above the Sterling mill. The lode bears a good reputation. . . . . We hear good news from the smelting works. Since the arrival of Mr. Herman they have commenced matting, and succeeded most admirably at it, saving vastly more value—some say, "four times as much" as formerly. If that is the case we shall have occasion to add many to the good words we have said of the Lyon process. . . . Judge Colvin, of Trail creek, is working Nos. 13 and 14 west, on the Freeland Lode, and has a good crevice of fair looking top stuff which he is testing in an arastra. Mr. Fields is working No. 4 west on the Champion dirt lode, in Trail run. The Champion is one of the best lodes in the country, the top ore having yielded from $300 to $775 per cord. The Chicago Company, property on Spanish Bar, are making excavations, getting brick and lumber, and putting in foundations for two large mills. . . . From the Denver *News*, July 11th, we condense as follows: The Bear river mines are situated on a tributary of Bear river which runs nearly due south, and is marked on Gilpin's map of Colorado. This Snake river was formerly called White creek, hence some persons in speaking of these mines allude to them as being on the White river. White river, proper, is a tributary of Green river, running in the same general direction that Bear river does, and is some thirty or forty miles south of the last named stream. There are no mines yet discovered on White river. But little prospecting has been done in the Bear river mines, as the company of three persons who worked there for a little while last season were in constant fear of Indians. Five gold-bearing gulches were discovered. The metal is of that variety termed "shot gold" by miners. One shaft nine feet deep has been sunk without reaching the bed-rock, the dirt yielding a good prospect from the grass roots down. Those acquainted with the mines feel very confident that, from the already discovered indications, the mines will pay $15 per day for each hand employed. Nothing is known of the quartz lodes of the Bear river country, as there has been very little if any prospecting for them yet done. . . . . Gulch mining is again looking up at Bucksin. A party who have been mining on Beaver creek for the last four years with indifferent success, have at last "struck it rich," and are now taking out at the rate of $50 per day to the hand. . . . . The editor travelling through the mountains writes: "We were surprised somewhat at the many indications of coal existing in the Middle Park, west of Grand river. Shale could be seen cropping out of almost every hill and mountain, while in the steep banks of many of the streams the coal strata itself stood boldly out. The rocks were generally lying in regular strata, with the proper geological dip to the southeast, except the unstratified stone near or on the summit of some of the tallest mountains. We are fully satisfied that the Middle Park has inexhaustible mines of coal of superior quality, and think from appearances that the same can be more readily mined than the coal-beds of the valley, as the strata of the Park does not seem thrown at fault, as it is in the coal mines of Colorado, now being worked." . . . . . The Central City *Register* says: A load of material for J. T. Lynch's smelting furnace will start over the range by way of Breckenridge for Montezuma on Snake river to-day. The furnace is to be completed as soon as may be, and will test the mines of that region. We believe he has no arrangements for crushing and separating ores, and consequently he will be able to treat the pure galenas only. Of course much of the richer ores will escape him, and the test will fail of the thoroughness desired." There are a large number of men in that locality at work, and some of the finest silver ores we have ever seen are being brought from there. We may yet hope for lively times this year in that section, as there is no better silver region in the territory. Captain Sanderson, who is just in from Puru district, on one of the northern branches of the Snake, brings the most encouraging reports. He has laid on our table some elegant specimens of argentiferous galena. He has six men at work opening mines. One of these mines has a crevice ten feet wide, and some even wider. They are very rich in silver. Work will not cease with winter, but will be carried on without cessation. His company is acting wisely. They do not propose to erect machinery or furnaces until they have ores out. He left Snake river at 9 o'clock in the morning, and reached Central before sundown of the same day. The trail is an easy and good one, coming by way of Argentine. From the Savage lode at Argentine we have also seen very superior specimens just brought in. Silver mining may now be regarded as one of the important branches of business of the territory. . . . . Mr. George W. Maynard, of Maynard & Tieman, mining engineers, of Central City, Colorado, and No. 240 Pearl street, New York, writes of Colorado coal as follows: No. 1. About sixty rods from the Bellemonte furnace is the outcropping of bed No. 1, *four* feet in thickness, which has been developed by a tunnel seventy-five feet in length, with a branching chamber, giving a total distance from the mouth of the tunnel of one hundred feet, the thickness of the coal being from ten to twelve feet. This bed has been the principal supply for Denver. No. 2. Bed No. 2 has been discovered, but not developed to any extent. It is about twenty-five feet perpendicular measurement above No. 1. No. 3. No development; is about fifty feet above No. 2. No. 4. No development; also about fifty feet above No. 3. No. 5. This bed has been developed by a tunnel over one hundred feet in length, the strata lying at an angle of thirty-five degrees. No. 6. This bed lies at a distance of about half a mile from the furnace, and is in the neighborhood of thirty feet above No. 5. This vein has been quite extensively worked, in consequence of its producing excellent coal for blacksmithing purposes. The developments have been carried on at a point nearly due east from the furnace, and at another point half a mile southeast. The dip of the strata is eight degrees; two will form one with the lower three-foot vein further in the hill, which will increase in width as the distance from the surface is increased. We are informed by reliable parties that this No. 6 vein has been proved to be one and the same with the most extensive of Prolific Butte, which is distant about two and a half miles southeast. The coal of this vein is the best which has yet been discovered, and is of especial interest, because it has been worked to a greater extent than any of the other veins upon the Prolific Butte property. The dip is forty-three degrees, whereas the dip of the same vein near Bellemonte is but eight. This is accounted for from the fact that at the Butte there has been an upheaval of the strata, which, however, will assume the horizontal after a more extended development. The lower tunnel, developing a vein four feet six inches in thickness, has been driven ninety-seven feet, and in the end has been opened up into the tunnel, giving a total height of drift of forty feet. The coal cuts the clay out below the tunnel, giving a total width of seven feet for the coal vein. The fire-clay lying between the sandstone and hard ferruginous clay, is the best we have ever seen, and is most admirable for assay crucibles, as has been proved by actual experiment. This deposit is well situated for economical working, and the amount of coal that could be taken out would have no limit other than the vigor with which the vein may be worked. Of the remaining veins in the neighborhood of Bellemonte, the one most extensively developed is No. 9, which is twelve feet in thickness, with a dip of forty-five degrees. There have been developments at two points, and about a thousand tons of coal taken out. The character of the coal of this entire region is "extra bituminous," crumbles quickly after exposure to the atmosphere, and burns rapidly, leaving but little ashes. . . . . A recent article in the *Tribune* runs thus: Regarding a second great wealth of Colorado—its mineral resources—a useful inquiry and prospectus has been set forth by a resident engineer. The native ores, it seems, are really ores of copper and lead (copper pyrites and galena), with ten to fifty per cent. copper, and as high as sixty per cent. lead, and sometimes with a large per centage of iron pyrites. In such ores as these, "gold is a mechanical mixture, and not by any means equally distributed through the lodes." These facts render its extraction by ordinary process difficult and unsatisfactory, ores, for example, assaying from $500 to $1,000 per tun, from which but $18 to $20 can be extracted by the stump-mill process. What is known as the desulphurizing process has for its object, so far as it is successful, the treatment of iron and copper pyrites only. Hence it is again stated that the composition of the Colorado ores would demand their reduction by smelting, if the exorbitant cost of fuel and fire-proof material (the only fuel available in the mountains being wood) and charcoal could be overcome. This very demand the coal and iron of Colorado are calculated to meet in time; no less than six beds of coal, three of which are developed, have been discovered in the rich mineral neighborhood of Bellemont and Profile Butte, where "there are outcroppings and bowlders of as pure iron ore as can be found in the world," and "sufficient ore in sight on the surface to supply Colorado, Montana and Idaho with machinery for the next dozen years." The experiments of the Bellemonte furnace show that 2,400 pounds of ore will produce one ton of pig iron, at a cost of $75, and a sale for $160 to $200, and that in three months seventy-five tuns can be produced. It happens, also, that the late discoveries of gold and silver are only sixteen miles from the coal fields, and the most celebrated mines in Gilpin county, but distant thirty miles, which can be readily overcome by raft. There is a multitude of good reasons for the speedy development of the coal and iron of Colorado, and not least urgent is the fact that the mineral supplies for working the Colorado end of the Pacific railroad must be obtained in that Territory.

Nevada.

The Comstock.—The following is from the stock circular of the Associated Brokers of the S. F. Stock and Exchange Board, June 23d: The mining share market has exhibited rather more steadiness, and most leading stocks have been less freely offered. Some of these claims, as is well known, are at present yielding handsome profits, and recent developments would seem to inspire the belief that they are not likely to become less productive for some time hence, while others, though not yet in a condition to pay dividends, are accumulating a fund for stockholders. Added to this, more economy and better judgment has of late marked the management and general policy of different companies, and dealers in these stocks can now feel that their interests are judiciously protected by honest and capable officers. . . . . Crown Point was sold at $1,000@$990, and closed at about the latter figure asked. During the week ending 17th inst., 648 tons of ore were raised. Considerable first class ore is being taken from the stope at the head of middle incline. The new station, lower level, is opened a distance of thirty feet. Receipts of bullion thus far in June exceed those of a like period last month. . . . . Hale & Norcross advanced to $1,090 and $1,100, and then sold at $1,300. In raising up one hundred feet from the seven hundred foot level, the ore has improved much recently, and at one hundred and seventy feet south of the north line, in stoping from the seventh floor, there is also an improvement, both in quality of ore found and in the width of the lode. In drifting east from the 535-foot level, a vein of splendid ore ten feet wide has been discovered. Some 2,000 tons of ore will be reduced this month, and the yield is likely to exceed 80,000. . . . . Savage declined from $1,050 to $995, rose to $1,000, then sold at $980, closing at $975, s. 30. During the week ending 17th inst., 773 tons of ore were extracted. The superintendent reports a decided improvement in different portions of the mine, with a large increase in the yield and quality of the ore. In sinking from the sixth level the winze continues in excellent ore to a depth of thirty-five feet and it is also stated that recent developments show that a good deal of ore may yet be taken from the lateral deposits on the upper stations. In the Curtis shaft the two southern compartments are almost completed, and good progress is being made in the drift toward the ledge. . . . . Gould & Curry rose to $800, and closes at $730 bid. The east drift from the second station now extends some one hundred and thirty-five feet, and the south and north branches from the fourth station are in about forty feet—the ore chambers above look promising. Receipts of bullion to the 20th inst. amounted to $97,000. The company's mill has been for ten days past running up to only about one-half its full capacity, owing to some repairs to the large engine. Booth's and Bassett's mills will crush some three hundred tons this month. . . . . Yellow Jacket rose from $690 to $710, fell to $620, rallied to $635, and sold yesterday at $645@$650. There is a large increase in the productiveness of this mine, and and for the two weeks ending June 4th and 11th inst., 3,679 tons of ore were sent to different mills, yielding (from partial returns) $109,835. We are also informed that the bullion product of the week ending 18th inst. exceeded $50,000. These are the most encouraging advices we have had the pleasure to chronicle for a year past from this claim. . . . . Ophir is less in favor, and small sales were made, receding from $347½ to $285, then selling at $295, and closing at about $285. From this mine there is nothing new in the way of development, the various drifts from the different levels disclosing little or no ore. . . . . Chollar-Potosi has been dealt in within a range of $205@$183, and selling yesterday at $190@$188. The Santa Fe station is said to look rather less favorable, and in cutting through the seam of ore from the Blue Wing, the old works have been broken into without finding ore beyond. In sinking a winze some forty feet from the 485-foot Potosi level, some low grade ore has been met with. The station drift (from new shaft) discloses some quartz, and the north and south drifts (from the second station) are in, respectively, 125 and 180 feet. During the week ending 16th inst, 712 tons of ore were sent to the custom mills. . . . . Alpha fell from $240 to $207½, and then sold at $206. Belcher fell from $200 to $150, rallied to $160, and closes at $155. Empire mill and mining is inactive, but well held at $145 per share. We can learn of no new feature in either of these claims. . . . . Imperial fell from $108 to $90, and sold yesterday at $95@$103. The receipts of bullion for the first half of this month amounted to $25,000. It is thought that the seventh level drift will soon reach the lode at that depth. Bullion fell from $62½ to $50, and then sold at $55. Overman declined from $29 to $21, rallied to $25, and sold yesterday at $25. Confidence is in a little better request, advancing from $26¼ per share to $35, and closing at $35. Lady Bryan was dealt in at $3¾@$1⅛, closing at $3⅛. Sierra Nevada sold at $3½@$2¾, and Exchequer at $7. . . . . Gold Hill, for the past two or three months, has been shipping bullion at an average rate of over $7,000,000 for the current year.

Pahranagat.—From notes furnished by Gov. Blasdel's party to Nevada papers, we learn that although the district has been discovered upwards of two years, there is but a solitary instance where an excavation has been made in a real or supposed ledge eighteen inches below the surface. There are several remarkable locations, outcropping boldly for the length of a hundred feet, which development may determine to be true ledges. These ledges are estimated by their outcropping to be from five to twenty feet thick, and many of them exhibit fine mineral. A singular vein, characterized as a mother vein, jutting above the surface bold and grand like a tower, is estimated to be fifteen or twenty feet thick, and apparently capable of yielding an abundant supply of a low grade of ore. It throws off at regular intervals a number of lateral spurs, varying from five to three feet in thickness, all containing seemingly upon the surface mineral of the richest character. It is doubtful whether they are spurs or transverse veins, as their mineral is entirely different from that of the mother vein; and no development has yet been undertaken to remove the doubt. . . . . Henry Schaefer, who left after the Blasdel party, says that much activity prevails in the district. The two smelting furnaces were completely finished and ready for use. They are situated at a point in the mines known as Logan's Springs. Captain Dahlgren is also constructing a large furnace at the same point. According to Mr. Schaefer, there are six to eight companies engaged there, which are employing from 100 to 150 men, working upon mines, smelting works, and as teamsters. He predicts that Pahranagat will ere long be generally regarded as a valuable acquisition to the already large silver domain of Nevada. . . . . By the new route the Pahranagat mines are 195 from Austin. A wagon road from Pahranagat to Callville—the head of navigation of the Colorado river—would be 200 miles. From Kern river to the mines, as the road will run, is 330; good grass. From Great Salt Lake city to Pahranagat 450; there is an open, travelled road.

Humboldt.—The Seminole tunnel is now in 150 feet; running in softer rock, now, and still improving—making two feet a day, and prospects that the rock will soon be found to yield without blasting. . . . . The Pioneer mill is kept running night and day. Superintendent Fall is doing everything possible to keep the mill supplied with outside rock, while opening the company's ledges. . . . . The American Basin company has its tunnel now in to a distance of over 600 feet. It is

working three shifts of men, now, and is running through scattered quartz and small seams of ore almost every day. Negus, superintendent, is on the lookout for the ledge right at hand.

Esmeralda.—The *Union* of June 9th. says: We have been informed that 2,200 pounds of rock from the Crockett mine have been worked by a gentleman from San Francisco, and yielded over $800 per ton. He also tried 400 pounds of the rock which they are throwing away, and got a return of $80 per ton. . . . . The hoarse bellowing of the steam whistle of the great Del Monte mill greets our ears regularly now three times a day, and its roaring is sweeter to the ears of our miners than the most exquisite music. We are informed that the ore crushed at this mill last week yielded very handsomely. Two other mills are kept running almost constantly, crushing custom rock in small parcels, the yield generally being satisfactory. . . . . Fifty or one hundred men could find employment at $4 per day in this and the adjoining districts. . . . . Work in the shaft of the Philadelphia company is progressing with commendable alacrity.

White Pine.—Eighteen assays of the first and second class ores obtained from seven different ledges, in White Pine district, gave an average yield of $33 of silver per ton. The best yield was obtained from ore of the Mohawk ledge.

Twin River.—The *Reveille* says: The excitement of the week appears to be in the rich strike recently made in the Autocrat, in Ophir Canyon, Twin River District. An assay of this ore was made by Thomas Cahill of this place, and gave the handsome result of $274.87.

Palmetto.—Mr. J. B. Irvin informs the *Reveille* that Colonel Catherwood, of the New York and Silver Peak Company, is largely interested in the district, and has a force of workmen employed in opening several ledges. He is also preparing to bring a mill into the district immediately. Mr. Irvin brought in with him a small load—some 1200 pounds—of ore from the Dayton ledge, which he has sent to the Long Island mill for reduction. An incline has been sunk on the Dayton to the depth of fifteen feet, developing a handsome vein of mineral fully five feet thick. Another ledge, called the Kentucky, of mammoth proportions, gives great promise.

Central.—A new district thus named has been discovered and located. The *Reveille* says, it is situated a little southeast of the summit of Charnock's Pass, leading from Smoky into Monitor Valley, and is called the Central District. A small piece of the mineral has been sent to us, which greatly resembles the best surface indications of the most famous ledges in the Philadelphia District. The ore is richly variegated by a variety of shades of the blue, green, and yellow stains of copper and lead.

Lander.—The *Reveille*, of July 3d, says: Dr. Goodfellow, the General Superintendent of the Great Eastern mine, shipped on Saturday last five bars of bullion valued at $5,266; to-day he shipped four large bars valued at $5.151 46; making the handsome total of $10.417 46, yielded by the mine and shipped within one week. The ore is of a superior quality, and averaged, as we are informed by the Doctor, over $200 per ton.

Illinois.

All reports from the newly discovered Illinos gold regions of Crooked Creek, in Schuyler county, Ill., twelve miles from Augusta, agree that the precious metal has been really found in considerable quantities—sufficient, at least, to encourage the search for it. A company is already at work, having pitched their tents and built a dam across the stream, preparatory to entering fully into the mining business. The Augusta *Banner* says: Our townsman, F. M. Harris, who is an experienced miner, has been down to see for himself, and reports the prospect very flattering. He tried his hand at "panning," and in no instance failed to get a show of the precious metal. His opinion is that the show for gold in the quartz is better than in the gulches. . . . Of the new gold discoveries in Schuyler county, the Rushville *Times*, of the 27th ult., says: There is, we believe, no longer any doubt as to the existence of gold in this county, and that, too, in paying quantities. The "prospecting" for the past week has resulted very favorably, and Dr. Clark will put additional force to work this week. The mines have been visited by numerous old miners, and they all give it as their opinion that the mines will be found equal to many of the best in California or Pike's Peak. We have received a communication from James R. Davies, of this town, an old man and experienced miner, and he gives it as his honest opinion that the gulches he visited will well pay working. . . . The Carlinville, Macoupin county, *True Democrat* says it is a matter of tradition that silver ore in considerable quantities formerly were found in that county, and the presence of valuable minerals became so apparent that a company was organized some months ago, under the name of the "Oil and Mining Company," composed of prominent citizens of Macoupin, Sangamon, and other counties, to test the matter. The company bought and leased some three thousand acres of land a few miles southwest of Carlinville, and have had a scientific agent "prospecting" for some time past, who generally reports favorable indications. Specimens of silver ore, lead and copper, and some quartz, have been discovered. We have seen specimens of the lead and silver, which seem to have a very large per cent. of pure metal. Many samples of these ores, and some sand that glitters with metallic particles, have been sent to Chicago and Springfield to be investigated. . . . The Pittsburgh *Manufacturing Journal* says: By referring to the report of the State Geologist it will be seen that Schuyler is far ahead of any other county in the State in mineral wealth, possessing gold, silver ore, iron ore, lead ore, &c. There is a legend that the Indians got all the lead they used for "pointing" their arrows from the banks of Crooked creek, and they also obtained from the same stream much of the gold from which they made the ornaments that bedecked their dusky forms. . . . The Galena *Gazette* says: We publish today another well written letter from the Galena mines to the New York JOURNAL OF MINING. The author is a practical Geologist, and a gentleman of cultivation, but he labors under a mistaken impression when he supposes that nearly all our old and experienced miners have gone to the gold fields of the West. We still have as good material here for mining Captains as ever lived among the mines. Men who come here from the East, and, assuming that our miners don't understand their business, attempt to teach them the best method of operating the mines, usually learn their mistake, sooner or later, and sometimes to their own mortification. It would be natural to suppose that men of ordinary intelligence, who have made mining a profession for many years, would know more about the business than a Geologist even, who has never visited a lead mine in his life. Theoretical knowledge is good as far as it goes; but without the practical it amounts to but little. We believe Mr. Phillips is right, however, when he says that lead mining here is only in its infancy. From the lower galena, the flint and even blue limestone, we shall yet take out millions of pounds of mineral, Mr. P. to the contrary notwithstanding. . . . The same paper says: A. Gladden, John W. New, William Hoskins and William Blewitt, commenced, prospecting last winter, or early in the spring, on the McNulty grounds, just beyond Hughlett's Furnace, about one and a half miles from this city. They went into an old shaft, about ninety feet deep, and after sinking thirty-five feet further, and being one hundred and twenty-five feet from the surface, they commenced to drift to the South. Having drifted some forty feet, they struck an opening which promised well; but as the air was bad, they concluded to sink a new shaft directly over the opening. This being completed, which was done about the first of May, they set themselves to work taking out mineral; and as a result of two months' labor, to the first of July, with four hands employed, they sold $5,000 worth of ore. The amount taken out during the month of June, they sold on the 30th of that month, to T. B. Hughlett, for $2,700, or nearly $700 to each man for his month's labor. We visited these diggings a few days ago, and were politely shown about them by Mr. Hoskins, one of the partners, who is superintending the work. The opening is a flat "East and West," averaging about five feet in height and from twenty to thirty in width. It has been proved about two hundred feet in length, but only at a few points has it been worked to the full width of the opening. At each end the mineral is as heavy as it has been found at any other point, and on either side project quantities of rich and well defined cubes. Parallel with, and only a few rods from this range, are the old Gaffner Diggings, which were worked for several years and yielded 6,000,000 pounds of mineral, worth, at present rates, $420,000. The Whittam Lead, another "East and West," near by, yielded 3,000,000. The opening in the flint rock, and all the indications are similar to those in the Gaffner.

Montana.

Correspondence dated June 5th, Virginia City, Montana, from one who had just arrived there from Colorado, says: My curiosity was somewhat excited with regard to the mineral aspects of the country on the way through. From and near the Larimie river, I saw good indications of copper and silver. Along and near Fort Halleck are large and extensive coal and iron beds. These extend upwards of two hundred miles. On Bitter creek I found an oil spring. This I will make you a present of, as I want to see one editor well off. In Utah is one of the best coal banks in quality that I have seen. A few years ago Brother Brigham offered a large reward for the discovery of coal in Utah. I wonder if he will come to the scratch? On Snake river we met prospecting parties from Montana on their way to find gold in the Wasetch range. It has already been found. . . . . Rich quartz lodes have been discovered in the vicinity of Pipestone Park. . . . . The Montana *Post* says that the Messler lode quartz claim is now under thorough development. . . . . A large number of quartz crushing mills are on their way overland to Montana. . . . . The claims on Silver Bar Gulch are rising rapidly in value. . . . . A 50 stamp mill is on the way to Mill creek, from the States. . . . . Bill Fairweather's hydraulic claims on Wisconsin gulch are paying one thousand ounces to a clean-up of five days' work. . . . . The Foster mill (24 stamps) will soon be located on the Messler lode, which is in a gulch below Summit. . . . . A company of eight men are constructing a ditch for the supply of water for the sluicing of 1,200 acres of dry diggings, between Brown and Silver Gulches. . . . . A man sliding timber down hill, the log tore up some quartz, which led to the discovery of what is known as the great Dacotah ledge, near Bannock City. It is very wide and immensely rich, and will yield enormously as soon as the powerful machinery is in working order. . . . . Many men are engaged in farming and mining in the vicinity of Mill creek; several new discoveries have been made in that locality that promises well. . . . . There is considerable excitement about Wigwam gulch. The prospects are flattering. One man took out two thousand dollars in a few hours with a rocker. . . . . A large emigration is constantly arriving in the Blackfoot country from California. . . . . A nugget of gold was found on Indian creek, weighing $870. The dirt pays rich. . . . . The Highwater trail to the Upper Blackfoot mines is good, but very mountainous. . . . . Elk creek, Montana, is constantly crowded with people, and business is lively. . . . . All the claims on Shirt creek are paying enormously. . . . . A miner's wife went out prospecting alone one afternoon, and struck a rich lead of dirt. She took out $300 with a pan in an hour. . . . . New gold discoveries are being made every day, and always followed by the usual mining camp stampede. . . . . Goods of all kinds are very low in all the camps. . . . . A correspondent of the *Alta*, writing from Helena May 29th says: "I have been here only two weeks, and of course can only give you a very hasty glance at matters and things, but perhaps may get near the truth, as my old acquaintance here enables me to get information that might not be at the command of a stranger. There is gold here to a very large extent, both of quantity and of quality, and it will last for years—not that the people here could not dig it if facilities existed, but because much of it must wait for ditches brought in and labor done for it. The very rich products are not, as many suppose, all over the territory, though they occur occasionally, but there is an immense amount of ground that will pay wages. I have seen one man who has taken out in McClellan gulch, in one day, one hundred and eighty-six ounces, and several days over one hundred ounces; but this is one claim. Ordinary and common diggings here are from ten to twenty dollars per day. The quartz here is rich—often very rich—and in immense quantities, if it all should prove good. The lodes are not generally large, but well defined, and apparently will be easy to work. Some capital is coming here from New York, but the mills are mostly experiments of bright geniuses from the other side, who know better how to save gold than any experience can teach them. Perhaps, in time, they may find that they are not getting along so fast as they might. I have spoken alone of gold-bearing quartz; there is also a great deal of silver, but all I have seen is, though rich, very much mixed with other metals, and will, I think, prove very rebellious. Agricultural pursuits are becoming very popular, and were it not for a perfect plague of grasshoppers, that is afflicting the country this year, would show a very pretty amount to the credit of Mother Earth in that line. The water of the river is higher this year than for many years past, and boats come to Fort Benton with no difficulty. The whole Missouri bottom is nearly if not quite overflowed. In short, this territory will do to come to to stop—not for one season, but for years. If people come here to make a hasty fortune the chances are one hundred to one they fail; if for five years, the same that they will succeed.

New Mexico.

General Carson writes to the Inspector General U. S. A., relative to Fort Garland and vicinity as follows:—"Fuel of all kind is specially abundant. The pinon is solid and resinous, burning with a bright hot flame free from smoke—everywhere are found saturated meadows of peat of the best quality. Coal is indicated to exist, both bituminous and anthracite, but is not used within the Park. On the entire rim of the mountains however, are stupendous formations of coal of the cannel species known as Albertine. Resin, tar and turpentine are produced from the pine, and valuable balsams from the fir tree—these great natural advantages will undoubtedly eventually, by careful and judicious outlay of capital, become the medium of extensive and profitable commerce. He then proceeds to describe the excellence of the roads, the facility of travel and transportation, and the quantity and excellent quality of water in its numerous streams; and continues: "The prominent feature of the envelope of immense sierras that surround this park and fort is the abundance of minerals, and metallic ores; these are of infinite variety—and when properly worked will probably prove of great richness—this is a natural inference from the physical structure, which groups in close proximity and contact all the varieties of rocks as classified by geologists. The Rocky Mountains is a homogeneous crest of the erupted primeval granite, which is presumed to uniformly furnish the precious metals. The Sierra Mimbres is of similar structure but containing large areas overflowed with rocks of volcanic fusion—immense craters and pedrigals of lava covered with soil and vegetation, fill the bottom of the Park; all varieties of other rocks variously altered and metamorphosed by heat, are readily found intermingled with these. Mines of gold, silver, and copper have been profitably worked by both American and Mexican skill; quantities of free gold have been obtained from placers some eight miles distant from the post. Iron, lead, zinc, platinum, cinnebar and precious stones have been discovered, but not yet extensively prospected or worked. It is in this Park that the great Rio del Norte has its sources, from whence it flows to the Gulf of Mexico. . . . . Major Law. G. Murphy reports from Fort Stanton, June 10th, as follows: There are several veins of coal running through the foot hill of the Sierra Blanca, but they are unworked and undeveloped. I have seen iron ore, found in the Sierra Capitain, lead and silver ore found in the vicinity of the Tularosa river in the Sierra Blanca, and gold bearing quartz lodes within a short distance of this post in this same mountain. From all I have seen, and information derived from reliable sources, I do not hesitate to say that there is vast mineral wealth in all the mountains in this vicinity, but more particularly in the Sierra Blanca. It only needs proper development. The fact is that the American settlers here are farmers, who came to cultivate the soil, and as they are well satisfied with the results of their labors, they have no inclination, even if they had the time, to turn their attention to other pursuits. They are fully sensible, however, of the value it would add to their holdings to have the mineral wealth developed, and those with whom I have conversed on the subject contemplate, as soon as possible, to organize parties for this purpose. In the meantime one or two intelligent gentlemen have turned their attention to this matter, and so far as they have gone, I am assured their prospects are very flattering, and further developments, will, no doubt, act as a powerful stimulus.

Pennsylvania.

The Pottsville *Miner's Journal* of July 21st says: The Pennsylvania Coal Company, we learn, have made arrangements with the transporting companies, by which their business is resumed again. . . . . We are happy to announce, says the same paper, that Mr. E. W. McGinnis has struck the Mammoth vein in the shaft which he has been sinking for several years past on the North American Lands, at a depth of four hundred and sixty feet from the surface. The shaft was sunk on the axis of the third basin from Mine Hill and also the third basin from the Sharp Mountain, a distance of

about fourteen hundred yards south of the Carey shaft of St. Clair. The distance of this shaft is about one and a quarter miles from the Sharp Mountain Basin at Port Carbon. The thickness of the Mammon vein, where struck, is twenty-two feet, which shows that this vein maintains its thickness so far as it approaches the most southern basins of the southern coal field. When Mr. McGinnis commenced boring for the Mammoth vein on the Gate vein axis, he commenced too far north, and consequently missed the vein at this axis, because the north pitch is much steeper than the south pitch; but in sinking on the present axis, he started the shaft further south, and struck it on the south pitch a little below the axis. We should like to see a company formed for testing the Mammoth vein on the Gate vein axis, within the vicinity of our borough, near Jalappa. From an estimate made by General Pleasants, of the depth necessary to be sunk at this point, it could be reached within one thousand feet. This would open the Mammoth vein in the two southern basins, and make a colliery that would last upwards of one hundred years, within half a mile of the shipping ports. If the landholders were to put in their lands at a reasonable rate in stock, securing a distance of several miles on the run of the veins, other parties might be induced to take stock and thus obtain the necessary funds to sink the shaft to the proper depth. The intermediate veins could be worked as soon as reached, while the shaft was progressing to the Mammoth vein. As the veins are all more or less crushed on the north pitch in the southern basins, it is believed that the Mammoth and other veins, pinched out above, will be found in much thicker masses at the lowest points in the basin. Such a shaft on the Gate vein axis would be the means of of testing the theory on the north pitch of the Mammoth on the Gate vein axis, by sinking on the vein from the axis to the bottom of the second basin.

Michigan.

It is a very singular thing that our Michigan exchanges almost invariably reach us two weeks after their date of issue. The consequence is that the mining intelligence from those regions is almost too stale to print. If our Michigan contemporaries will take a little pains to send us their papers promptly we shall be enabled to do justice to their State's mineral and metallic productions. . . . . The Portage Lake *Gazette* of July 13th, says that the June product of Portage Lake mines was as follows:

FRANKLIN MINE.

Stamp	146,761 lbs.
Barrel	47,109 "
Mass	16,305 "
Total	210,175 lbs.

Or 150 tons 175 lbs.

ALBANY AND BOSTON MINE.

Stamp	30,775 lbs.
Small Barrel work	700 "
Total	31,475 lbs.

Or 15 tons 1,475 lbs.

Relative to the Rockland Mining Company's property, the directors state: "Since our last report work on the new vein has been pushed with vigor; one shaft has been sunk to the depth of about sixty-five feet. The vein is looking remarkably well, yielding rich stamp and barrel work and masses. Another shaft, No. 2, is commenced, and we are pushing the development of this vein as rapidly as the nature of the ground will permit. As far as we have progressed it promises as well as any vein that has yet been worked. The yield of mineral from the old mine for March, April and May of this year was forty tons, five hundred and ninety-five pounds, including one mass of eight tons. While the entire expenditure, including the amount expended in developing the new vein, was less than $15,000. The yield for May was twelve tons, and the last report from the mine shows two masses in sight the weight of which will be soon determined. Our stamp-mill is being improved and put in good repair; which, with the introduction of new washers, will materially reduce the expense of this portion of our business." June 1st the company had a surplus of cash, over and above all liabilities, of $30,787 63. The copper now on hand is being held for an advanced price. . . . . From the Keweenaw *Times* of July 7th we condense as follows: For the month of June the product of the St. Clair was six tons five hundred pounds; of the Etna six tons one thousand pounds; and of the Central one hundred and two tons seven hundred and sixty-eight pounds. . . . . At the Eagle mine everything is of the most encouraging nature. No. 1 shaft is being sunk to the 20 fms. level. It is now down thirty-five feet. The vein in the present bottom of the shaft is over two feet wide and remarkably strong. It is proposed to sink this shaft a distance of eighty-two feet from the first level and then open on it north and south, which will successfully prove the ground north on the Eagle river property. . . . . At the Essex No. 1 shaft is now down one hundred feet from surface. The vein in the shaft a part of the way down is of a very strong and promising nature. A shallow adit strikes this shaft about twenty feet below the surface, but is at present of no real value, it being too shallow, having a back of twenty feet at the point of intersection with the shaft, and is hence of no use as a drainer. The drift starts north from this shaft just ninety-two feet below the surface. The vein at the starting point of the drift is about two feet in width and running at this width the entire length of the drift—or about two hundred and fifty feet. The course of the vein is north 15° east. This mine will, no doubt, ultimately prove of great worth. . . . . At the Ætna the copper masses are at present of very good size indeed, one of which runs diagonally across the drift, and is exposed about eight feet in length, with the fact plainly apparent that it will run further out in the country still. The bottom of this mass had not been reached when we were at the mine, although two holes had been fired with the design of reaching it. These holes loosened up the rock about two feet in depth. Now stop for one moment and attempt to estimate the weight of this mass of copper at the Ætna. Thickness of mass full ten inches. The other mass spoken of drops down from the side of the drift directly upon the one in the bottom, and though not showing so large as the other, is yet of a very respectable character. As at present exposed, it cannot fall much under fifteen hundred pounds. In the side of the drift also is a large piece of copper showing, but whether it is a part of the mass in the bottom of the drift or not we cannot say—the appearance, however, at the time of our visit would lead to such a belief. We hope it may be a third mass. Another encouraging feature of the mine here is the vein, it being full six and a half feet in width, and showing well in stamps mineral. On Monday last the "Northern Light" took on ten and a-half tons of the Ætna copper, included in which shipment was the small mass spoken of above, weighing 1,064 pounds. This is the largest shipment of copper, we are told, ever made at one time from the port of Copper Harbor.

Arizona.

The Arizona *Miner* says: Of nothing have our miners complained more than greasy ores (so-called). This greasiness coats the quicksilver, and prevents amalgamation, and of course the gold floats away. This greasiness is usually, perhaps always, caused by the presence of steatite or talc in some form. In some forms this bears the name of soap-stone. Every one knows its greasy character. Its composition is silicia, magnesia and water. It often contains (especially in Colorado) a small amount of carbanic acid. Meerschaum is also a variety of talc. Thus much for the composition of the mineral substance which causes the trouble. Burning may not remove the difficulty, because this combination will not be materially changed by the action of fire. It must be some substance that will have a chemical action. Quick-lime has been found in many instances to have the desired effect in destroying the oily character, and has been extensively employed, and with the best of success. In some cases other mineral substances will be found to be the cause of the greasy character, and the ores must in such case be treated differently. Sometimes roasting the ores removes the difficulty. Only practice and experience can conquer in every case. Every different ore may require a different treatment. Where the talc or minerals occur it will often be found necessary, even after burning, to use some other combinations, while antimony and arsenic can only be got rid of by roasting. . . . A correspondent writing from El Dorado Canon says: Miners are continually passing through here from Nevada to the mines in different parts of this Territory, traveling in large companies. On the 3d inst. a saddle and pack train passed through here, which numbered forty-one miners and eighty animals. They were from Austin, and armed to the teeth, also well mounted. Another train of seventy-five miners will soon be here, Some extraordinary assays have been made here quite recently. Professor Howdan has obtained $4,300 to the ton, in silver. Another lode assayed $1,090 to the ton, in silver. Things are progressing finely here. The above assays were made from croppings. . . . The *Alta* learns from Mr. Abraham Brook that no work is being done at the Sierra Colorado, Santa Rita, or Mowry mines, on account of the high rates and scarcity of the necessaries of life and the danger from hostile Indians. Mr. Brook prospected portions of Arizona, Sonora and Chihuahua, along the frontiers, and found gold, silver and other metals in abundance. Gold, in placers and in quartz, is found in many places, and all that is needed to develop a wonderfully rich mining region in that vicinity is peace and security against the Apaches; the other things will come in due time. The placer mines near the Gila, in the vicinity of "Gila City," long known to be very rich, but not workable on account of the want of water for washing, are about to be opened by a company, who are erecting machinery for hoisting water from the Gila river and carrying it to the point where it is required. . . . A letter from Prescott, June 6th, says: "Christie, Grooms & Co. have secured the Swilling Mill to put upon the Sterling Lode. The greater part of the mill will arrive in town to-day, and the teams are going directly back for the remainder of the mill. Mr. Lamson has made a contract with the owners of the Sterling for some of the lode, on which, I am told, he is to erect a mill and crush a certain amount of quartz for said interest. I understand that Mr. Lamson is going to California shortly, to get the mill and other things needed therefor. The long-looked-for Woolsey's water-mill turned its wheel, for the first time, on Friday last, the 3d inst. They have not cleaned up yet, but, from the indications, they think the yield will be good. There was an arrival, a short time since, of twenty-two Dutchmen from Colorado Territory. They report several trains on the way from the Atlantic States to this Territory. The Accidental mine, with its little mill, are paying very well. I am told it has paid from $300 to $350 per ton for the last three weeks. The company have taken out enough to clear themselves of indebtedness. The boys are at work on the Bully Bueno mine, and are down some eighty feet, with a show of good quartz. The shaft of the Eureka mine has been sunk to the depth of seventy-five feet, and looks fine. The contractors on the Sterling mine are down about seventy-five feet, with a beautifully-defined ledge. The miners on Big Bug are doing first-rate. The placers yield well, and the quartz veins show good indications. Borger & Co. are getting along finely with their mill, and will have it running the last of July." . . . The *Miner* says: The Big Bug and other lodes which are to be worked are said to be proving very rich. . . . Most of the timber has been sent from town for the Big Bug mill, and we learn that part of the machinery is now on the road from La Paz. . . . Jack Swilling and his followers, to the number of eighty or a hundred, congregated at Wickenburg and Pima villages, and were to leave upon the proposed expedition to the White Mountains on the first of June. . . . A correspondent says: Eight mills are now landed in the country, and all under immediate erection. The districts intended for the most extensive working, are the Big Bug and Lynx Creek or Walker mines, both of which contain more placer, as well as lode, mines than any district in the country. The last clean up that was made from a two-stamp mill, crushing ore from the Accidental lode, resulted in a yield of $250 per ton. This is the largest yield that has yet been made, and with proper treatment can be held as an average from day in to day out. A new discovery has been made of placer mines, upon which extensive works have been made for a permanent working. A *mesa* including several miles, and at least 20 feet above the bed of the creek (Lynx creek), has been prospected and found to contain gold enough to pay for working. A ditch for the purpose of ground-sluicing has been made, and the work begun by running through top dirt, which pays $6 a day per hand. The company working it is formed by officers discharged from the Union army. They are much better satisfied with the result than they anticipated, and expect to take out treble the amount when fairly under headway. One great obstacle with these mines is that only about seven months in a year can they be worked, on account of the failvre of the water in the creek.

Virginia.

The celebrated Tredegar Iron Works at Richmond, Va., says an exchange, have drawn most if not all their pig iron from within the State, and the manufactured iron turned out there is of the first grade of excellence. The iron supplies of Virginia are scattered throughout the State (above tide and water,) and are as wonderful as those of Missouri and far more accessible. Among its many iron regions, one of the most remarkable is the vast deposit of brown hematite ores in Allegheny county, known as the "Iron Mountains of Virginia." The Messrs. Jordan own, near Covington, in that county, a tract which has been described as a cubic mile—not a superficial mile—of brown hematite iron ore; and that vicinity alone is estimated as able to furnish a million of tons of iron a year for more than a century.

Idaho.

Very rich ledges have been discovered lately in Quicksilver District, near Ruby City. . . . . Harrison and Benson mills are now running and crushing rich quartz from many ledges in the vicinity of Rocky Bar. . . . . Two claims called the Andy Johnson, and the Mayflower, are said to be very wide ledges and yielding fabulously of silver. . . . . Large freights are now under contract from Umatilla to Idaho City, at 6½ cents per pound. . . . . The Centerville mines are paying well. . . . . There is nothing new from the Indian country. . . . . Business is brisk at Idaho City. . . . . The road between Virginia and Idaho cities has been much improved lately. . . . . The people of Idaho are in a muddle as to whether the capital is at Boise or Lewiston.

Utah.

The Union *Vedette* speaks in most hopeful terms of mining prospects in Utah. Stockton, Pahranagat, Cottonwood, Bingham Canon, and Deep Creek Districts are all securing a good share of New York capital. In addition, new mines are being discovered daily. Utah has great advantages in an agricultural way.

North Carolina.

It is stated that a lump of gold is on exhibition at Statesville, N. C., weighing five pounds. It was taken from a North Carolina gold mine.

Canada.

Valuable mines of lead are found in Canada, as we learn from the Montreal *Trade Review*. Some of these mines are thus described in the Geological Survey: "The Ramsey mine, lot 3, range 8:—A vein cutting nearly horizontal beds of gray, goediferous, brown-weathering dolomite. The vein is composed of calcspar, and has a breadth varying from two and a half to five feet, in which the galena is disseminated in a width of from eight to twenty-four inches. In some portions the vein is almost dead ground, while in others, judging by the eye, it would yield nearly two tons of eighty per cent. ore per fathom. The bearing of the lode is about N. W., and its underlie to the north-eastward about a foot in a fathom. A trial shaft has been sunk on the lode to the depth of thirty-seven feet, and the working of seventy-five fathoms of ground, in 1858, yielded twenty-six tons of ore of eighty per cent. A smelting furnace was erected to reduce the ore, and a ten horse-power engine used to give blast to the furnace and dry the shaft, but a considerable spring of water having been struck, it became necessary to erect a more powerful engine, and one of fifty horse-power has just been completed. The dolomite is underlaid conformably by sandstone, which crops out about a mile from the mine and is unconformably supported by crystalline limestone and gneiss of Laurentian age. About 105 fathoms south-eastward from the main shaft, a counter lode joins the main one at an angle of about 20 deg., its course being nearly N.N.E. and S.S.W. At the junction of the two lodes a shaft has been sunk in sandstone, to a depth of twenty-one feet, and in the excavation of the pit in which the united lodes have a breadth of ten feet there have been obtained about seven tons of ore of twenty per cent. . . . The Lansdown Mine, Lot 3, Range 8:—Ore from a vein cutting crystalline limestone and running N. 60 deg. W. The vein has a thickness of from six to twelve inches, and is composed of calcspar, in which the galena is disseminated in lumps, which, in a trial shaft of about fifty feet, sunk in 1854, on the land of Mr. Buel, were sufficient to pay the expenses. The largest of these lumps may have been five or six inches in width. A counter lode diverges from the main one near the shaft, and in this neighborhood there occur four additional lead-bearing veins, running parallel with the main one, all contained in a breadth of about 1,000 feet. They run obliquely across the lots, and thus intersect the lands of the several proprietors. On lot 4 of the same range,

Messrs. Foley and Co., of Montreal, have sunk a small shaft on one of the lodes. . . . Bedford, Lot 19, Range 7. —Ore from one to five nearly parallel lodes, cutting crystalline limestone in the breadth of about a quarter of a mile, on the property of Mr. Weston Hunt, of Quebec. The gangue of the lode is a mixture of heavy spar and calcspar. About a mile to the eastward of these, are other nearly parellel lodes, also cutting crystalline limestone, on land belonging to the same proprietor. Shallow trial shafts were many years ago sunk on some of these, but what quantity of lead ore was obtained in them is not known. On lot 13, range 5, of Bedford, Messrs. Foley and Co., of Montreal, have sunk a trial shaft to the depth of fourteen feet, on a lead-bearing lode of six inches, of which the gangue is heavy spar. It cuts crystalline limestone and reaches gneiss, and in both rocks shows good bunches of ore. This lode is about three miles south-west from the first-mentioned, and runs parallel with them. . . The distance between the Lansdown and the Bedford lodes is about twenty-five miles; they bear for one another, and it appears not at all improbable that the veins in the two localities may be identical or belong to one group. If a line from the Bedford to the Lansdown lodes were continued twenty-five miles farther, it would cross the St. Lawrence and strike Rossie, in the St. Lawrence county, New York, where a well known group of veins of lead ore intersects Laurentian gneiss. Though just now abandoned, some of these are supposed to be still unexhausted, and two of them are known at one period to have yielded a great quantity of ore—one of them as much as $142 to a fathom. The Ramsey lode belongs to a series of veins which run parallel with those of Bedford, a distance of about forty miles to the north-eastward, and, although the two groups cut two different rocks, both are probably of old age, which would not be older than that of the calciferous formation of the lower Silurian series.

New Grenada.

A recent letter from Panama says that some German miners are prospecting for gold in the *totalla del oro*, or "tower of gold," in the Cauca. . . . Another letter states that many prospecting parties had returned to Luguenes, Cauca, and all had been unsuccessful. Gold was found everywhere, but not in sufficient quantities to work. "Stay at home," is the advice given to all. . . . . The Virginia City, Nevada, ***Enterprise*** of July 1st says: J. L. O'Connor, the only successful miner in New Granada from this State, and whose letters from the Barbacoas mines last fall and winter, induced the first rush from here to that miserable country, was in this city a few days ago on a short visit, having formerly resided here. He says that while in Panama on his way back, a party of prospectors, who had returned from the mines, attempted to visit their wrath on him, giving as a reason that it was through his information that they emigrated to the mines, and their proceedings were only brought to a stop by the American Consul at that port bringing out the military. Mr. O'Connor says that both in San Francisco and in this city he has been spoken to disrespectfully by returned New Granadians, but that he never requested or advised any one to come to that country, and that no published account authorized by him ever appeared in any paper; but, on the contrary, he wrote to a few friends advising them not to visit the mines. Those who did go to Barbacoas arrived there flat broke and destitute of nearly everything. The mines, he says, belong to the grant-holders, and the right to work them must be bought of them, which costs from one to three thousand dollars. On Friday last he married Mrs. C. T. O'Connor, the widow of a brother of his, and a well-known resident of this city, where she has numerous friends, and in less than half an hour afterwards O'Conner and his blooming bride left on the Pioneer stage for San Francisco en route for a wedding tour to New York, from whence he will return to Barbacoas again. The mine O'Connor was working was the only one found to pay, and he and his partner were the only Americans who made any money at all in that section. They both made snug little fortunes. His letters to Mrs. O'Connor, in this city, the lady he has now married, contained the first information that any of us had at all regarding those mines, and a package of $400 in gold dust from his mine, forwarded through Wells, Fargo & Co. to this same lady, was the first and only gold dust from there ever seen by Virginians. We cannot say that he ever asked any one from here to come down there; but the rush from here was created entirely through his letters and the magic influence of the sight of that gold. He was regarded with considerable curiosity and interest during his recent short stay among us, and there was quite a crowd collected to see him off.

British Columbia.

From Hope, June 4th, we have the following: "Allison arrived here yesterday from Similkameen. He has a party of men engaged in repairing the Hope and Similkameen trail. Mr. Allison states that the trail will be open and in good order by the 10th. He expects that trains will be in Hope on the 12th. . . . . The Chinamen have struck good paying diggings on the north fork of the Similkameen. The Chinamen admit having made three dollars per day there, and that there will be a number of Chinamen working that stream as soon as the water falls a little.

Oil Summary.

Pennsylvania.

The Pithole *Record* says: The prospect at Pithole is very encouraging. The work of reviving old wells is still going on very briskly. The system of casing wells seems to be meeting with great favor, and is likely to be generally adapted by well owners. There is no disposition on the part of producers to sell their oil at the present low figures, and the consequence is that considerable quantities of the article are being stored in anticipation of a rise. This we believe to be wise policy, for the price of oil cannot remain long at its present low figure. It is now as low as it will be, and no one need fear for a fall in price. No wells have of late been stopped in this vicinity, but, on the contrary, the number of producing ones have increased. There is at present really more activity in our oil producing territory than at any time during the last two months. . . . From the Titusville ***Herald*** we learn that the well owners on Bennehoff's Run have lost no time in rebuilding what was recently destroyed by fire.

California.

From Del Norte we hear favorable accounts; and, as to wells in the southern part of the State, the Los Angeles *News*, of June 16th, says: We learn that there is now being collected from the Wiley spring several barrels of crude petroleum per day, and that the company have on hand over two hundred barrels, which they propose to refine and dispose of in this market. Superintendent Rushmore has also increased the quantity of oil taken from the company's works near the Wiley spring, by boring several new wells and by tunnelling in the hill near the spring; this company have also on hand a large quantity of petroleum, which they are preparing to refine.

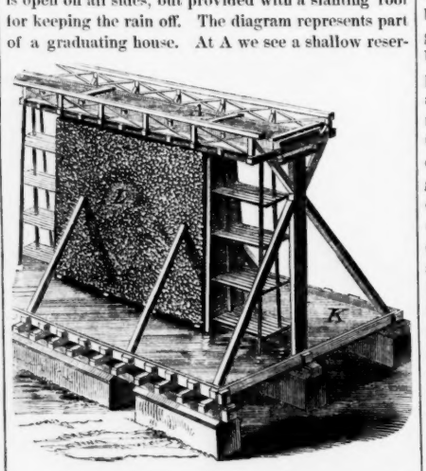
Original Papers.

[WRITTEN FOR THE JOURNAL OF MINING.]

SALT—Number Ten.

By FRANCIS E ENGELHARDT, Ph. Dr., Professor of Chemistry in St. Francis Xavier's College.

The advantages that may often be gained by deep boring are readily seen from the following fact. At Rodenberg, in the principality of Schaumburg, a brine of 0.6 per cent. of salt was formerly obtained. After boring, the well yielded a brine of 5.1 per cent. of salt, its strength consequently had increased 8½ times. The cause of this increase is that the brine is obtained directly from the rock salt, and is less weakened by the mixture of surface water with it. In a great number of cases, the brine as pumped from the wells is too weak, and the price of the salt too low, to pay for an evaporation by fuel alone, consequently a peculiar method has been adopted in Europe, of evaporating the largest amount of water in the air. This is called "graduation." The oldest process practiced for effecting this, and which is still in use in some parts of the continent, is the distribution of the brine over flat, inclined wooden surfaces, or the passing it ten or more times over many thousand feet of rope, that is stretched forward and backward till it is sufficiently concentrated for crystalization by artificial heat. The newer plan, which is now universally adopted in Germany, was introduced into that country from Lombardy in 1559. The graduating house is a wooden structure, from eight hundred to several thousand feet in length, and twenty to thirty feet broad at its base, and from forty to fifty feet in height. The position chosen for the building should always be in an open place, and the longest sides ought to be exposed to the winds prevailing during the summer months. The building is open on all sides, but provided with a slanting roof for keeping the rain off. The diagram represents part of a graduating house. At A we see a shallow reser-



voir for receiving the brine. L represents a so-called wall, constructed generally of black thorn faggots placed between the lath-work in a horizontal manner; it is at its base about nine feet thick. At K may be seen the reservoir which receives the brine after the first graduation. The entire structure is divided into several parts as necessity requires. Each of them consisting of an upper reservoir, a separate portion of the thorn-wall and a receiving reservoir below. Along both sides of the upper reservoir run small wooden tubes or dropping channels, which are provided with many small holes below. Into these tubes the brine passes through wooden stop-cocks, fastened at intervals along the respective reservoirs; it falls through the small holes in the tubes on to the two faces of the thorn-wall below, and is subdivided by the latter during its fall to the lower basin into an infinite number of small drops resembling a fine rain. Thus the largest amount of the surface of the water is exposed for a long time to the action of the atmosphere, and its fall can be regulated by the attending workmen. If the wind be very strong, blowing against one side of the thorn-wall, the brine is permitted to fall only on this side, and the flow on the other side of the thorn-wall is stopped, as otherwise the wind, blowing through the faggots, would carry the brine on the other side, beyond the lower receiving basin, and it would thus be lost. I have already mentioned that the entire structure is sub-divided into several parts. These parts correspond in number with the number of times the brine has to fall on the thorn-wall until it is sufficiently strong to be evaporated by artificial heat. The water when pumped up collects in the first reservoir, passes thence on to the first portion of the thorn-wall into the first reservoir below, is thence pumped into the second upper reservoir to fall on the second portion of the thorn-wall, into the second lower reservoir, and so on, repeating the process six to eight times, by which time the brine possesses a specific gravity of 1.16. During the summer months, the evaporation by artificial heat is discontinued, and the brine is stored up in immense reservoirs for winter use. The eight reservoirs at the Salza salt works are capable of containing twenty-four millions of gallons of concentrated brine, and are so constructed as to be protected from frost during winter. The process just described is called the "one-walled graduation." In those parts of the country where building material is cheap and easily procured, the thorn-walls are erected in pairs. When the outer surfaces only of these two walls are used, it is called "surface graduation," and, when at the same time with the others, the two inner ones are employed, "cubic graduation." The effect of graduation is seen by the following statements at Schoenebeck. The surface of the thorn-walls is 390,000 square feet, and the evaporation for one day amounts to about 3.7 cubic feet of water for every square foot of surface, consequently during the time the process can be employed, (258 days) two thousand seven hundred and seventy-two millions of gallons of water are evaporated. The process of graduations has also its limits, since as soon as brine becomes stronger than 20 per cent., the loss on salt counterbalances the results obtained, and therefore must be stopped. At Shoenebeck the loss amounts to 12.4 per cent. during the graduation, which is caused partly by the amount of brine carried across the lower basin by the wind, and partly by the evaporation of salt along with the water, and indeed any person who has been near a salt-work may perceive by the taste, that the atmosphere contains a certain amount of salt. This fact was moreover amply proved at Nauuheim, where a plate of glass, exposed on a high pole at a distance of six hundred feet from the thorn-walls, was in a short time covered by a thin crust of salt. The cubic graduation does not exactly double the effect. At Durrenberge observations show that the increasing ratio is 5.8 or 9. During the winter months, especially when frost sets in, the graduation must be discontinued, since common salt and sulphate of magnesia at 27 Fahr., according to Bergelius, decompose each other in such a manner as to form chloride of magnesium and sulphate of soda, which change remains even after the temperature has increased. Besides the progressive evaporation of the water that takes place during the process of graduation, other changes may be observed in the brine. The carbonates of the earth (lime, magnesia, &c.) that are usually present, are dissolved in the brine as bi-carbonates. The water, coming from the well into the reservoir, and passing through the graduation process, is exposed to the atmosphere, and loses not only its own free carbonic acid thereby, but also one-half of the carbonic acid that was united with the

earthy matters to form the soluble bi-carbonate. The soluble bi-carbonates of the earth become consequently insoluble carbonates, and are deposited with the greater part of the gypsum on the surface of the thorn-wall, forming gradually thereon a thick crust called thorn-stone, consisting of carbonate of lime, magnesia, manganese, proto-oxide of iron and gypsum or sulphate of lime. In consequence of the forming of this incrustation, the thorn-wall must be renewed every seven or eight years.

GRADUATION AT DURRENBERGE.

One cubic foot of brine contains :

Before graduation	2.5	lbs. of salt.
After one "	3.9	" "
" two "	5.6	" "
" three "	8.0	" "

One hundred pounds of salt are therefore dissolved :

Before graduation in	58.3	cubic feet of water.
After one "	24.7	" "
" two "	16.6	" "
" three "	11.3	" "

For every one hundred pounds of salt are therefore evaporated :

In the first graduation	13.6	cubic feet.
" second "	8.1	"
" third "	5.3	"

[WRITTEN FOR THE JOURNAL OF MINING.]

LEAD FIELDS OF THE UPPER MISSISSIPPI—No. Six.

HOW LEAD ORE IS MINED.

By J. VANCLEVE PHILLIPS, M.E.

In a former paper I gave a rough outline of lead mines at numerous points in the lead field. The descriptions will now be followed up, commencing with what are known as the "Menomonee Diggings." The little village of Jamestown, in the south part of Grant county, Wis., sprung up at the time the mines were discovered at this place (1830). The country here is a high rolling prairie, the altitude being about three hundred feet above the Mississippi river, distant eight miles. The discoveries and mines of lead ores are both on the summits of the ridges, and in the valleys and ravines. The "diggings" cover a district of country some two miles square, the deepest valleys being one hundred feet below the summit of the ridges. The lead measures are covered with clay from three to twenty feet deep—the whole district is peppered with the prospect holes of the lead miner; these in places are in a linear direction, running east and west, the piles of yellow ochre and clay being fifty feet apart, and extending along for five hundred feet. Here the miner has followed a crevice, and worked out the ore, which lay in the form of a broken east and west vein, the different shafts being connected below by drifts. Where the clay was deepest the shafts were planked up three by four feet square, the hoisting of the clay, sand, ochre, and ore from the crevice was all done by a common hand windlass, rope and tub, and one or two miners working at the windlass. The limestone strata is nearly horizontal; the lead vein stood vertical in a matrix of clay and ochre; sometimes the ore comes up to the grass roots, and again was thirty or forty feet deep. The highest grounds on these ridges have a cap-rock over the crevices; this carries only small strings of ore. Below this cap the crevice expands, the vein is larger, and ore of a more perfect cubic form than along the sloping grounds of the ridge is found. The veins which make the most ore are in the centre of the ridge, and under the cap rock. One hundred feet deep generally cuts out this ore. The veins make parallel from fifty to three hundred feet apart. In the valleys, these crevices throw out ore in patches, where the ore may extend out fifty or one hundred feet from a crevice, or reach in a kind of unstratified vein, from one crevice to another. We go a mile north—the clay here is completely riddled with shallow pits; these are connected by small galleries cut out in the clay, on the surface of the rock. One hundred acres are cut up in this manner. In places the dirt piles take a linear direction. Here has been a vein going down in the rock; the shafts have been sunk from fifty to one hundred feet deep. Millions of pounds of seventy per cent. lead ore have been taken out of this crevice. The course is fifteen degrees from a true east and west line—a sure index to the lead miner that the length of the lead vein will be limited. These ranges of dirt piles are seen in parallel lines, and have the same general course. They may be fifty or three hundred feet apart, yet show that some law is connected with the forming of them—that they are not accidental, occasioned by the internal or upheaving force of the globe, but have more probably received their course from some electric law, and are probably connected with the fissures of the whole lead field. All the ores in this district in the fissures are "gash veins," and limited in depth to the upper Galena limestone, which is one hundred feet thick. The ores, worked from the clay over the rock, may be classed as unstratified veins, and may extend over acres of ground in this broken chunk from over the surface of the lead measures. Millions of pounds of ore have been raised from the clay here, at a depth of five, ten, and twenty feet. The principal mining was done here from 1830 to 1840. The deepest work done over an area of 2,500 acres is one hundred and twenty-five feet, and not less than 20,000,000 pounds of seventy per cent. lead ore have been raised. The district is a rich farming country. This ore was raised and sold when lead was three and four cents per pound, and ore about one-forth its present price. There are not over ten miners now at work at these diggings. Five miles south of Menomonee diggings is the town of Fairplay. This was formerly the theatre of active mining operations. The principal "diggings," or mines, are on a ridge north, and two ridges south of the town. The ores here are more in the form of true east and west "gash" veins—a few patches of ore in the clay only. The ridges are about one hundred feet altitude above the valleys. The principal mines are found near the summits of the ridges. To get an idea of the practical geology of this district, we must go to the Mississippi river—which is west six miles, the point being opposite Dubuque—and get the position of the lead measures. To get down to a floor of stratified rocks widely known, we must go five hundred feet below the bed of the river, and here we find ourselves on the surface of what is known as the Potsdam sandstone. This is a fossiliferous rock, which we must suppose was once the floor of an ocean. Above this comes the lower magnesian limestone, a rock of the same age as the great lead bearing rocks of Missouri, two hundred and fifty feet thick; then sandstone one hundred and twenty feet thick; then the lead measures, four hundred feet; and above, the Niagara limestone, three hundred feet thick. This would take us up six hundred feet above the present level of the river, yet evidently at one time the surface of the country. The valley through which the river flows at this point is abraded down through six hundred feet of strata, and within seventy-five feet of the bottom of the lead measures. The lead measures are subdivided as follows: Buff limestone, thirty feet; blue limestone, seventy feet; lower Galena limestone, one hundred feet; upper Galena limestone, one hundred feet; cap-rock, fifty feet; blue shale, fifty feet; above this, the Magora limestone, three hundred feet. The blue limestone is a highly fossiliferous rock, and rises thirty feet above the river opposite Dubuque. At low water, along the river for miles, this rock shows weather-worn slabs, where are seen fossils from an inch up to ten feet in length. The ocean, at the time this rock was laid down, swarmed with animal life. The bluffs on each side of the river are 250 feet high, this being the level of the country back for several miles. On the west side of the river, six miles back, the Niagara limestone forms a table land, which is six hundred feet altitude above the river, and the general level of the prairies of Iowa. This table land is supposed to be the western boundary of the lead field. Coming east six miles of the river, and near Fairplay, is the noted conic hill, known as the Sinsinawa Mound. This covers 100 acres of land, and is formed of Niagara limestone; it is 600 feet altitude above the river, and is an outline of the table lands of Iowa. From the Sinsinawa Mound to the river the country is cut up in valleys and ridges, the valleys gradually becoming deeper from the mound to the river. The ridges radiate from the foot of the mound, are there broadest, and gradually throw out arms, which taper and terminate in bluff or vertical walls, or escapements of limestone along the river. For the reader to get an idea of the topography of this part of the lead field, suppose a line be drawn from the top of the table lands of Iowa to the top of Sinsinawa Mound; the distance is twelve miles, the river near the centre, and following a channel cut down in the rock 250 feet deep and one mile wide—the level of the lead field being about 300 feet below the summits of the mound and table land, and 300 feet altitude above the river. The dip of the rock each way from the river is about 80 degrees with a plane of the horizon. The valleys about Fairplay are cut down through the shale, cap rock, and upper Galena limestone, to the surface of the lower Galena rock. The ridges are rounded off, leaving a thin shell of the cap rock on their summits. These ridges are serpentine, traversing the country in all directions; the lead ores are in east and west crevices, and veins most productive when under the cap rock. About one hundred of these east and west crevices have been discovered, these being parallel, and crossing a belt of country three miles wide. These crevices commence to be productive about three miles east of the Mississippi river, first on the summits of the ridges, and gradually increase in richness coming east. Some of these crevices have been followed two miles, the lead vein "jumping," in mining language, from one ridge to another, and gradually working in the wet grounds coming east, and have been abandoned. At a rough estimate, 50,000,000 pounds of 70 per cent. lead ore have been taken from these crevices. The work has principally been done by practiced miners, two and four working in company; the deepest ore worked being about 120 feet. In 1854 a New York mining company put an engine and pump on the east end of one of these crevices, and sank a shaft 164 feet deep, going 80 feet below the water level in the crevice. This shaft drained a number of parallel crevices where ore was going down, which should have been worked at the time. The company had formed an idea that all that was necessary to get lead ores in quantity, was to sink a deep shaft, and expended their money in direct opposition to what was known of the practical geology of this district, and failed. This is the deepest shaft yet sunk in this part of the lead region; and ore not being found at this depth, has discouraged other parties from venturing in the wet grounds. These are gash veins, confined to the upper galena limestone. Going east, this limestone dips in a basin; the lead veins become capped over with cap rock and blue shale; the country carries surface water, and the evidences are that the ores washed are but the out-cropping ores of a great undeveloped lead field, or basin, filled with this class of veins.

PEDLAR'S CREEK.

We will now look at the lead diggings 45 miles north-east, at the village now called Linden, formerly known as Pedlar's Creek, from the fact of a wandering Israelite in 1830 having found gravel or surface lead ore at this point, and reported it to miners, who flocked in and discovered what was known as the "Pedlar's Creek range." We will glance at the topography of this district first—eight miles north-west of Mineral Point, 50 miles from Galena. The country consists of small prairies, a succession of limestone ridges, and a district drained by the head waters of the Pecatonica river, clear springs breaking out of bluffs of limestone.

DIVIDENDS.

The De Soto Oil Company of Rochester, has declared a dividend of 4 per cent., payable on demand; and the Tarr Homestead Oil Company 10 cents per share, payable at their office in Philadelphia. The interest due August 1st on bonds of the Carbon Hill Coal Company, will be paid by the treasurer of the company in this city.

MEETINGS.

The Broad Top Coal and Iron Company will hold a special meeting, August 1st, at 117 Broadway.

WHAT IS SAID OF THE "JOURNAL OF MINING" BY THE PRESS.

From the Oregon State Journal, June 16.

W. F. Loomis is the California agent for the AMERICAN JOURNAL OF MINING, published in New York weekly, at four dollars per year. It contains mining intelligence from all parts of the American continent, and devotes much space to California, Colorado, Nevada, Idaho, Montana, and all the mining localities of this coast. It is superior to any of the mining publications which we have yet seen.

From the Mazatlan (Sinaloa, Mexico,) Times, June 13.

JOURNAL OF MINING.—On our fourth page will be found the prospectus of the AMERICAN JOURNAL OF MINING, the first number of which was issued on the 31st of March. It is edited by George F. Dawson, who was in this part of Mexico some three years ago, and is doubtless remembered by many of our citizens. We have received several numbers of the JOURNAL OF MINING, and we feel fully justified in saying that all the promises made in the prospectus are fully redeemed. The paper contains sixteen pages, and is well adapted for binding. We bespeak for it the success it so well merits.

AMERICAN
Journal of Mining.
[ILLUSTRATED.]

GEORGE FRANCIS DAWSON,
EDITOR.

By publishing contributions, the JOURNAL OF MINING *does not necessarily endorse the positions assumed by contributors.*

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☞ Correspondents, exchanges and others addressing us should be *extremely careful* to write "JOURNAL OF MINING," instead of "MINING JOURNAL," to ensure safe carriage.

NEW YORK, SATURDAY, JULY 28.

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IS IT "WILDCAT," OR IS IT NOT?

In making up our last week's Mining Summary, we took from a San Francisco exchange—probably the *Alta*—a paragraph stating that the Annita copper mine of Del Norte county, California (office No. 8 Broadway, N. Y.), commenced shipments in June, and that 6,000 tons of the ore, assaying at 20 per cent., had been put in sacks for shipment. During the current week a gentleman—concerning whose character we have since made satisfactory inquiry—called at the JOURNAL OF MINING office, and informed us that he believed there was no truth in the statements made in that paragraph, and that he trusted we would, in this issue, correct any false impression that might have been made by our last. We replied that we were always glad to publish truth, and would be happy to give his version of the matter—which, accordingly, appears among other "correspondence" in this issue. We afterwards communicated with the Annita Copper Company the pith of the gentleman's assertions, in order to give them a chance to answer in the same issue. The Secretary said he had not seen the paper from whence we derived our information, but he had no doubt that it was correct, as they were expecting such information daily; that our informant must have made such statement for the purpose of injuring the company; and that, as the shares were unknown in New York, and not quoted on the Stock Exchange, their value here was not determinable. The Treasurer, Mr. Ferguson, added that the statement that any one had been offered 20,000 shares of the company's stock was quite *false*. Between the two, perhaps it may be hard to decide which of the parties tells the truth. But, from the printed report furnished to us by the company, and dated "near Crescent City, California, April 3d, 1866," we sift some "indications." The Assistant Superintendent, in concluding that report, says:

"Upon dressing the ores, I find more refuse and less shipping ore than I calculated on last fall. I have now two thousand tons of dressed and at least twenty-four per cent. ore, and a large heap of material just as it is brought to the surface from the mine."

And Charles Halsey and C. H. Brackett, Resident Trustees at San Francisco, under date of April 8th, say:

"We have examined the above report of Mr. Humphrey, Assistant Superintendent, and it is correct. The results from this mine will place your treasury in a condition to make a dividend by July 1st next, of five per cent. in coin on the entire capital stock, and there can be no doubt that a similar dividend can be thereafter made quarter yearly."

Now, in the first place, if there is no double-dealing going on, how is it that the 2,000 tons of dressed 24 per cent. ore was not shipped to England in April? There are several parties in San Francisco ready at any moment to advance 50 per cent. on copper ores; so that lack of means cannot be pleaded. Then, again, how is it that the promise of the Resident Trustees, relative to a 5 per cent. dividend on July 1st, has not yet been performed, if 6,000 tons of copper were really shipped in June from the mine? And how is it that this report, *bearing date nearly three months ago*, appears to be the latest news the New York officers are in possession of? If they have not received later information of a satisfactory character, either by mail steamer or telegraph wires, they are remiss in their duty to stockholders; and if they *have* received information, whether good or bad, and are suppressing it for their own personal benefit, then they are dishonorable men. Considering the statements of our correspondent and those of the Treasurer and Secretary of the company, we are inclined to think that there is more truth than poetry in the allegations made against the company. If the concern proves to be a swindle, we shall feel proud of our share in exposing it; but if the contrary, we shall make all amends in our power—and in the meantime, if the company's officers have anything to say in their defence, the columns of the JOURNAL OF MINING are open to them.

THE MINERAL LAND BILL.

Although this bill, much to our surprise and regret, has been hurried through both Houses of Congress, we have not yet heard, and trust we shall not hear of its approval by the President. From our latest advices it is evident that the passage of this bill was promoted by false telegrams and other despicable means adopted by the heavy capitalists who are probably at the bottom of the whole thing. The amendment tacked on by Senator Stewart is particularly obnoxious to the miners of Colorado, Nevada, and elsewhere in the West, because it debars every one of them from owning a claim, unless they have "expended in actual labor and improvements thereon an amount not less than *one thousand* dollars." If that is not unequal legislation we know not what is. Why it would crush out all the hopes of the poorer class of miners—the very men who are the pioneers and discoverers of the hidden wealth of our country. But not this alone; the idea of the entire bill is founded in bad statesmanship, and if it become a law will prove the most unpopular law ever passed. Our own views on the subject of mine legislation were given some months since in a letter to the House Committee on mines and mining. We believe that those views are to a considerable extent those of the mining community, and hence the plea of ignorance cannot be made in mitigation of the sentence that will be passed by the mining States upon their Congressmen who voted in favor of the passage of this bill. It is said that Senators Stewart and Nye, and Representative Ashley of Nevada, received a telegram stating that "the people of Nevada are unanimously in favor of the measure;" but to show the falsity of the telegram we need only mention that of the seven papers published in Nevada, the Gold Hill *News*, *Eastern Slope*, and perhaps others that we have not yet seen, condemn it without stint. The Gold Hill *News* judges that "a vast majority are dissatisfied with the measure," and the *Eastern Slope* says:—"Under the new regimen, should it be inaugurated, capitalists will pursue the cheaper method of purchasing the whole mining region—the unexplored portion we mean—and take the chances of getting one valuable mine out of an hundred." We are opposed to all legislation that tends to monopoly. We object to anything that will aggrandize the rich at the expense of the poor. This proposed law, filled with the seeds of monopoly, would have precisely that effect—hence we have opposed it. Besides, all foreign capital seems to be excluded from our mines by its provisions, which must prove a serious blow to the mining interests. However, we can only hope that at the adjournment of Congress to-day, this will be among the list of unapproved or vetoed bills.

UTILIZATION OF REFUSE COAL.

A new and rather curious method of treating the refuse coal dust, which amounts to so large a percentage in all coal mines, is spoken of by our latest advices from Great Britain. It is nothing more nor less than pasting the dust together with a mixture of alkali and starch! At Sunderland the price of stone coal is about from 6s. to 8s. per ton. At the same place the coal dust prepared in cakes as above mentioned, costs only 5s. 3½d. per ton—making a difference in cost of from 8½d. to 2s. 8½d. per ton, or say an average of 1s. 8½d. per ton—an amount well worth saving, particularly where enormous quantities are used. Besides this, the patent coal-dust-cakes possess other advantages, chief of which is the fact that the coal dust is utilized. They are more cleanly to handle than ordinary coal; can be stored with less loss of space—occupying only 32 cubic feet to the ton—instead of 42; and are said to produce a brighter and stronger fire. It is also said to be smokeless, inodorous, and to leave less clinker than ordinary. With all these advantages, it will surprise us greatly if this plan be not rapidly adopted by the coal producers of this country. The method of preparation is this: Grind the "slack" to powder by a grinding wheel in the circular trough of a mortar-mixing machine, and add the compound of starch, alkali and water in the proportion of 8lbs. starch and 3½lbs. alkali to the ton of coal dust. This compound is made by first mixing the farina with a small quantity of hot water, then hot water is rapidly let into the mixing tank until the liquid has acquired the proper consistency, when the alkali is added.

Mineral Statistics.

We have long been of the opinion that a Bureau of Mines should be created in the Treasury Department, and hence are glad to learn that an amendment to the Civil Appropriation bill, "appropriating $15,000 to enable the Secretary of the Treasury to collect statistical information about the mineral re-

sources of the Pacific States and Territories," recently offered by Senator Conness, was adopted. This is a step in the right direction—a short one to be sure, but still a step. But had the amount of appropriation been $100,000 instead of $15,000, and *all* the States and Territories included, instead of simply those on the Pacific, we should have been much better pleased. What were the Senators from Michigan, Illinois, and Wisconsin, thinking of when they allowed their States to be passed by? and those of Pennsylvania, Missouri, Ohio, and other States, rich in minerals? Surely nothing could be more essential to a full measure of national prosperity than the establishment of a Bureau for the collection of statistics of the products of gold, silver, copper, iron, lead, tin, and other metals, or their minerals—those products that have so important a bearing upon the industrial wealth of the entire country. The next session, Congress, we trust, will attend to this matter.

Coal Supply of the West.

Referring to the fact that while anthracite is selling at $5.37½@$7 per ton in New York, it is held at $14 in Chicago, and that Philadelphians are rejoicing in the prospect of getting coal at the low ante-war prices, the Chicago *Journal* says:

"This sounds finely to Chicagoans who are now compelled to pay twelve dollars per ton or do without, and have paid double that price within the last three years to a heartless and unscrupulous one-man monopoly."

The people of Chicago, if discontented—and it seems they have reason to be so—should endeavor either to procure a cheaper road for coal and heavy goods (say the double track line exclusively for freight, talked about last winter,) or develop the Michigan or some other available coal field. It certainly is not for the interest of our country that needless sums should be expended in mere carriage, or that one particular coal field should be developed at the expense of another nearer the place of demand.

A Grand Work.

A clause has been incorporated into the Civil Appropriation bill authorizing an expenditure of $40,000 for a survey of the Isthmus of Darien (Panama), under the direction of the War Department, for the construction of a ship canal, in accordance with the report of the Superintendent of the Observatory. The fact that so large an amount is appropriated, is pretty good evidence of the practicability of the scheme, and that the work, once commenced, will be pushed forward most earnestly. As a measure of military necessity, guaranteeing adequate protection to our possessions on the Pacific Ocean, the outlay involved would be justifiable, and when to such considerations we add the more expeditious transmission of all merchantable articles at greatly reduced rates, its value to our far-western mining interests, will readily be appreciated.

Immigration.

From an examination of statistics we find that the number of emigrants from Europe arriving in New York city this year is nearly double the number that came last year, as up to July 25th of last year there were 88,902 arrivals, against 143,890 up to July of this. We advise all of them who are able-bodied men, and have no settled idea to follow out, to go to the West—to the Far West if they can—where labor is needed in the mines, and is well compensated. They need not be frightened out of going because ignorant of mining, for in spite of such ignorance, if they are strong and willing, they can get work immediately upon arrival there.

The Sub-Atlantic Telegraph.

The last news, to the afternoon of Sunday, July 15th, was to the effect that the Great Eastern had at that time paid out 283 miles of the cable, and had run a distance of 263 miles from land. At this rate, had everything gone well, we should have heard of her success long ere this. We fear that the recent hurricane must have struck her. Possibly, however, the electric storms that have prevailed during the past two weeks may have affected the continuity to such a degree as to cause the steamer more than once to take in cable again, which of course would account for the delay. We hope for the best, but are prepared for the worst.

Nytro-Glycerine.

We understand that the Blasting Oil Company's operations are progressing favorably, and that their manufactnre will be ready for delivery in six weeks time. This will be good news for miners, as it will undoubtedly come into use throughout all the Mining districts, but more particularly in Pennsylvania and California.

Robbing Peter to Pay Paul—A Decided "Bull."

In the course of an article upon the decreased production of petroleum, the Titusville *Herald* says:

The most successful means, at present, of ***increasing the production***, has been Col. Robert's Torpedoes, but for every barrel he has produced there has been a falling off in other localities of two.

Steel Rails.

The Hudson River Railroad Company are now laying steel rails, on a length of thirty miles, at the lower end of the road. We also notice that in Europe, iron rails, with steel heads, are being used successfully.

Correspondence.

[To insure insertion of Correspondence in our columns the full name and address of the writer must be given.]

A Mining Company Shown Up.

EDITOR JOURNAL OF MINING:

SIR—In continuation of the conversation had with you this morning, in regard to the Annita Copper Mining Company of California, I beg to say the following: I have very good reason to suspect that the Company in question is not a "bona fide" Company, but only gotten up, and incorporated and puffed, for the sake of selling the stock to unsuspecting outsiders. Knowing that your paper is a highly respectable one, and that you would not wish to assist in any nefarious scheme, I beg to give you the following items of information regarding the Annita Co., adding that you are very welcome to use my information in any way you choose, only requesting you not to *print* my name in your periodical. Having bought in February, or early in March last, some of the stock of this company, I advertised it at $2 per share, for two or three weeks in three daily papers, without getting any bid for it at all. At the same time, I saw letters from San Francisco dated April last, stating that the stock was in good demand there at 72 cents, meaning $7 20 per share. These several letters were addressed to the officers of the Co. in New York, say —— Capers, President, and —— Ferguson, Treasurer. I then wrote and telegraphed to California, offering my stock at $7 per share; and when a telegram reported the sale impossible, I ordered the stock to be advertised conspicuously in the best San Francisco papers, and the answer was that the sale was impossible, and that the mine was "not yet opened." All this was done in San Francisco, through a leading house there. The Company had a circular issued early in April, in which the actual condition of the mine was reported, and in which 2000 tons of dressed 24 per cent. ore as on hand was mentioned, also the dividend of 5 per cent. in gold for the 1st of July. This dividend has not yet come, and in the meantime, a friend of ——Ferguson, (Treasurer of the Co.,) offers me 2000, or 3000, or 10,000 or 20,000 shares of the stock of this company at 40 cts. per share, 3 months' time, and this stock comes right from the same Mr. Ferguson! From all this, you may safely infer that the article in your last paper, (21st July,) about the Annita Co., is only calculated to deceive outsiders in regard to the value of the stock; and without wishing to have these details represented in your paper, I should be glad if you would embody my information in such a way as to warn people, and thus to counteract the effect of the paragraph in your last issue. As already mentioned to you verbally, I expect, in a few weeks, full details about this, which I think to be a gross swindle from California, and I shall let you know what I hear. * * *

NEW YORK, July 24, 1866.

As our correspondent has no objection to our using this information in any way we choose, we have given it just as it came. In our editorial columns, under the head of "Is it 'Wildcat,' or is it not?" we allude to the matter more at length.

COAL.—No. Four.

EDITOR JOURNAL OF MINING.

SIR—A description of the process of boring may appear superfluous, since it is an art so well understood by Americans, who have carried it to greater perfection than any other nation. The first operation is to dig down through the loose earth until the first stratum of solid rock is reached, when a wooden tube is placed in the excavation, or a cast-iron pipe is driven through the same, so as to prevent the soil from being washed into the bore hole. The next step is to commence boring, which is accomplished by hand, horse or steam-power. Boring by hand is often resorted to in localities where the over-lying strata are known to be shallow. It is performed by a strong spring pole, fixed over a cross-frame of timber, firmly secured to the earth at one end, while the other is free and much elevated. Attached to this free end is a swivel, from which the rods and drill are suspended. Two men standing together, having a handle attached to the rods, bring them suddenly down, pounding the rock at every blow. When the pulverized rock assumes a thickened consistency, the rods are removed from the hole, and a sand-pump lowered repeatedly down until the hole is clean, when the rods are again placed in the hole. At times a "rimmer" has to be employed to give roundness to the hole. Subterraneous boring is often performed by means of a windlass. A short rope is made to pass once or oftener over the roller, one end of which is attached to the rods while a man holds the other. When the rods are to be lifted he tightens the rope, and after they are sufficiently raised he eases it and the rods slide pounding the rock as before. Boring by horse-power may be performed by means of eccentric machinery adapted to the common horse-gin. From the machinery a rope is made to pass over a pulley fixed upon a triangular, or square frame of timber, raised above the hole. Fastened to the other end of the rope are two large iron links, made to slide into each other and prevent the jerking strain of the rope. From the lower end of the lower link is a rod, having a socket screw, for the insertion of the drill, which is about a yard long. Boring by steam is done by the help of a portable steam engine fixed at a short distance from the frame-work, and connected to one end of a walking beam by a "pitman rod." At the other end of the beam is the rope, which passes over the pulley as before. It sometimes happens that the drilling tools break off and fall to the bottom, and there become fixed in the hole; when this happens the boring ceases until the tools are removed from the hole. Great ingenuity is often required to remove them, and in some instances they have had to remain as if they had become immovably fixed. As the holes reach points where indications of coal appear, the contents of the sand-pump are anxiously watched, and it is no unusual thing for experienced borers to determine accurately the thickness of the vein. In approaching old workings that have been abandoned for some time, it is necessary to carry forward exploring drafts in advance. These are bored by iron bars, chiseled at one end and worked by hand. These holes are kept six to twelve feet in advance. Some of the Newcastle mines have been saved from ruin by this means, while others, by neglecting it, have brought on themselves ruin of property and sacrifice of life. Thus at Gundreath, in South Wales, they holed into the old drowned workings unexpectedly and twenty-seven lives were lost in consequence. A MINER.

SHAWMUT, Elk Co., Penn.

The Crosby and Thompson Process, "The Thing, if not the Only Thing."

For the information of miners and mine capitalists, we recently wrote to Mr. Wetherbee, agent of the Crosby and Thompson Process, in Boston, asking the following questions.

First.—What has been the average amount of bullion per ton, extracted by your process from Colorado ores?

Second.—At what cost per ton was said ore extracted from the mines?

Third.—At what cost per ton was it transported from the mines to your reduction works?

Fourth.—What was the cost of production per ton?

Fifth.—What was the cost per pound for transmission of bullion to New York or Boston?

Sixth.—What was the average amount of ore per diem run through your reduction works after they were fairly started?

Seventh.—About how much would similar works cost, independent of price charged for using your patented process?

Eighth.—What do you charge for the use of your process?

Receiving no reply, and presuming our note to have

miscarried, we wrote again. After considerable delay we received the following:

EDITOR JOURNAL OF MINING.

SIR—I have just returned from Colorado; have your several letters, cannot reach them for several days, am so busy, will then reply as fully as possible. In the meantime, you may be *sure* C. & T.'s (our)process is "*the* thing, if not the only thing."

J. WETHERBEE.

BOSTON, July 14, 1866.

Subsequently the following rather discursive epistle came to hand:

EDITOR JOURNAL OF MINING:

Sir—Yours of June 2d and 20th received. Acknowledged a week ago, and according to promise will reply, being somewhat over my hurry from an absence to Colorado. At the present time, I will say, I can hardly answer categorically your questions. I have just made a *statement* to my "stock constituency;" it is in print, and I will send you a copy of it as soon as it is out, which will explain why I cannot give you categorical answers, and give you an idea or two that may be interesting to you. Now in reference to your letters:

Answer to First—We have been wholly occupied for eight months in perfecting the notions which, in their combination, form our (or Crosby & Thompson's) process. They consist of, first, a *crusher*, to reduce fresh ore to nut size; second, a *concentrator* (this reduces it then to gunpowder size, and separates dry the iron, quartz, and dust—it is an institution); next, thirdly, a *desulphuriser* (this I consider perfect, no matter what is said to the contrary where it may have been imperfectly put up—no unprejudiced person, seeing it do its duty, will condemn it any quicker than they would a water-wheel, for its purpose); fourth, a *polisher* (for its mechanical action and capacity it is a large cylinder, one-third full of boulders—it is an institution); next, fifth, our *amalgamator*, or a Hepburn pan (whichever we choose to use. The latter is perfect, with our preliminary action, but does its work in batches—the former we are now using successfully, yet want to test it further before we give it preference to the Hepburn); it is of great and continuous capacity. Now they are connected, and all run in combination. I have seen them do at the rate of two cords, or fifteen to twenty tons a day. We consider the capacity full twelve cords (120 tons) a week. Before we can say we do this continuously the rig must be mechanically perfected, which will soon be done. These sections which, in their combination, form one process, are the perfect ultimates of many experiments; they need in their connection and combination that the mechanical part should be more finished and perfect. We have done, however, in the shape it now is, what satisfies us—that is, while I was there, from about four cords of ore, not remarkably good, about $1,300 in gold. We were full ten days getting it. I don't think we worked more than seventy-two hours of the ten days. Stoppages, for reasons above stated, took up the rest of the hours for repairs.

Answer to Second,—From one of our lodes $3 to $3½ per ton, and the other, which we are doing the most in, $2½ per ton; in the latter, eight men can get out two cords a day of twenty-four hours.

Answer to Third,—The above cost, in answer to second, includes transportation. We got out the ore and delivered it to the mill, and can do it and are doing it at from $2½ to $3½ a ton.

Answer to Fourth.—We have calculated very carefully, and are doing about two cords per day right along, the manipulating in the mill can be done at $2½ per ton. So as to be safe beyond all question, I fix the whole cost of mining and milling at South Boulder, where water and wood are plenty, at within $6 per ton at the present time—tendency downward as every one knows.

Answer to Fifth.—You can answer that as well as I, under the circumstances.

Answer to Sixth.—As I have said, 15 to 20 tons per day makes our rig perfect. As it now is, we cannot do but one or two days' work a week, but an expert mechanic says it can be made to run as regular as a water-wheel. Waiting for that, the above is as near as I can come to an answer.

Answer to Seventh.—A mill built and power in, I should think $10,000 would do the whole, and perhaps patent and all. I may be wrong a thousand dollars or two, but think I am not.

Answer to Eighth.—When we got up our desulphurizer, in our ignorance we thought that alone was a process, because it desulphurized the ore and did not lose the gold, and we charged some $2,000 for the patent right—no further royalty. We have learned at considerable cost it takes more than that to be a success, and we think we have got it and *think no one else has*; are hardly yet prepared to answer the question till we are not only sure, but are getting out the gold continuously, as we have done when we ever run. One thing, if it be the thing, no one will ever complain that we are making too much money on *our rights*, for we are modest. J. WETHERBEE.

Treas. of Excelsior Co., and Crosby and Thompson's Process.

BOSTON, July 21, 1866.

Special Notices.

TO ALL PARTIES INTERESTED IN MINING.—One of the Gardner Patent Rock Drilling Machines is now at work daily, driven by compressed air, and will continue for a few days longer, drilling rock at Sterling & Kerr's machine shop, No. 344 and 346 West Twenty-fourth street. All interested are invited to call *soon*.

INCRUSTATION OF STEAM BOILERS.—One of the greatest chemical discoveries of recent date is that of a means of preventing this greatest of evils in the use of steam, viz: Incrustation. It is well known that to this deposit of lime and other salts, which is a non-conductor of heat, is due many of the explosions, and all the burnt-out boilers, besides immense waste of fuel. The fact that *one-sixteenth* of this scale, or stone lining, requires nearly *fifteen per cent.* more fuel to generate steam through it, will readily explain the waste of fuel, when it is remembered that one-quarter, a half, and even *one inch* thickness, is no uncommon occurrence. This extra heat necessarily involves the destruction of the iron, as the metal cannot overheat while water is in contact with it, whatever the outside temperature—hence will be seen the necessity of keeping boilers free from scale. The article we refer to is the invention of Mr. H. N. Winans, of New York, and is known as Winans' Anti-Incrustation Powder. He states that it has been in successful operation for ten years past.

YIELDING.—We have just seen three ingots, containing 150 lbs. of silver, from the Pioneer and Inskip Manufacturing and Mining Co.'s mill, the produce of sixteen days working. The Secretary tells us that the Company is working quite steadily, and with an approaching dividend of five per cent., to be followed by other similar ones at intervals of three months.

GOOD FUSE.—We have on our table what appears to be an excellent quality of waterproof fuse, made by Wren, Dunstone & Bright.

MARKET REVIEW.

FRIDAY EVENING.

Gold—Opened this morning at 149⅞, but at 2 P. M. was quoted at 150⅛. The loan market continues easy. Loans at call are obtained at 5 per cent. and with government collaterals at easier rates. Good commercial paper is taken at 5 to 7½ and is scarce. Foreign exchange is quiet; bills at 60 days on London 107@108 for commercial; 108¾@109 for bankers'; do at short sight, 109¾@110; Paris at 60 days, 5.20@5.13¾; do. at short sight, 5.13¾@5.08¾; Antwerp, 5.17½@5.15; Hamburg, 36¾@37¼; Amsterdam, 40@41; Frankfort, 42¾@43; Bremen, 78¼@79; Prussian thalers, 73@74.

There is more activity shown on the stock exchange. Government stocks are in active demand for investors. Old 5.20's have advanced to 107¼, and 7.30's to 103¾. Railroad shares firm.

The exports of gold and silver from New York have been as follows since Jan 1:

January	$2,706,336	June 16	$6,056,743
February	1,807,080	June 23	1,409,286
March	1,045,039	June 30	550,574
April	588,875	July 7	1,630,739
May	23,744,194	July 14	2,229,270
June 2	3,631,874	July 21	416,013
June 9	4,220,456		
Total to date, since Jan. 1			$50,036,420
Against same time last year			18,464,789
Increase since Jan. 1			$31,571,631

The deliveries of gold from California at New York, since Jan. 1, 1866, have been as follows:

January	$2,364,263	June	$2,189,226
February	3,633,431	July 2	1,621,948
March	3,967,553	July 9	1,429,833
April	1,551,721	July 21	2,064,062
May	3,783,186		
Total to date, since Jan. 1			$22,605,203
Against same time last year			9,720,188
Increase since Jan. 1			$12,885,015

Iron.—There is no material change to re port. Of No. 1 American Pig the supply is still very short; small lots have sold at $48@$48 50; 500 tons for September delivery, at $48; No. 2 American in better supply, but no great demand. Scotch Pig unchanged; 200 tons Glengarnock were sold at $47 ex-ship, and 300 tons from yard, at $48@$48 50. The reports from Great Britain show great depression, notwithstanding the decreased manufacture occasioned by strikes. Ryland's Weekly Report of July 14, states that this reduction in Scotland is going on at the rate of 1,000 tons per day. At the beginning of the strike nearly 6,000 men were thrown idle; and though it was thought that the strike was almost at an end, it is found that nearly one half have got employment at the shale works. Of the rest many are employed at other work, or are still holding out. In fact, scarcely a tenth of the men have submitted. The market in Scotland is weaker; as low as 52s. cash has been accepted. A few lots changed hands on Wednesday, at 54s. cash, 54s. 6d. eight days. Pig Iron, mixed Nos, warrants 54s. 3d. to 54s. 6d., No. 1 G M B 55s. to 55s. 6d., No. 3 54s. to 54s. 6d. Gartsherrie No. 1, 64s. In Bar Iron there is an improved demand, but no particular change in prices.

Steel—Is firm at last week's quotations.

Copper—Is in less demand, and the supply having improved prices have declined. Baltimore and Lake, 31c.@31½c.; yellow metal bolts, 34c.; new sheathing, 44c.@45c.; yellow metal sheathing, 33c. In England the *Mining Journal* reports a better feeling. Still a considerable amount of business has been done during the week, under smelters' prices.

Lead—Is quiet, holders asking higher prices than buyers are at present willing to give.

Tin.—Pig is in good demand, with a slight improvement in price. There is however, little offering. Plates are also in short supply, without, however, much demand; prices firm. Ryland's Weekly Report says of the South Wales trade: "There is a large demand for Tin Plates, at the prices agreed on by the trade at last meeting, viz., 32s. per box for charcoal I C f. o. b. at Liverpool.

Spelter—Is dull.

Salt.—The supply of sack and bulk is limited and prices firm, though without much demand. Liverpool ground $1 60@$1 80; fine Worthington, $2 75@$2 85; Ashton's (gold), $2 75; Turks' Island, per bush, 53c.@55c.

Petroleum.—Crude yesterday was quiet but firm. Sales of 2,000 barrels at 23c.; prime light straw to white, bonded, 38½c.@39c.; standard white, 39½@40c., and refined, free, 54@56c. The receipts at Philadelphia last week were: Crude, 2,500 barrels; refined, 4,088 barrels. And shipments: Crude, 190,160 gallons; refined, 567,868 gallons.

THE COAL TRADE.

Coal is inactive, pending the anticipated change in tolls. Of Scranton, deliverable at Elizabethport, 30,000 tons were sold by auction on Wednesday for account of the Delaware, Lackawanna & Western Railroad Company. The prices were as under as compared with last sale:

JULY 25.				JUNE 27.			
TONS.				TONS.			
9,000 Lump	$6 37½	@	$ 6 50	8,500 Lump	$6	@	$6 40
5,000 Steamboat	6 50	@	6 60	4,500 Steamboat	6 62½	@	6 87
5,000 Grate	6 62½	@	6 75	2,500 Grate	6 75	@	7 00
3,000 Egg	6 75	@	6 80	3,500 Egg	6 90	@	7 00
4,000 Stove	7 20	@	7 30	6,000 Stove	7 00	@	7 25
4,000 Chestnut	5 50	@	5 55	4,000 Chestnut	5 70	@	5 85

Showing a decline of about 12½ cents in steamboat, grate and chestnut coal, and a similar advance in lump and stove coal.

Shipments of Pittston Coal by Pennsylvania Coal Co., were as follows for week ending July 21, 1866:

By rail	11,750	
By canal	946	12,696
Previously (1866) by rail	102,647	
" " canal	9,880	112,527
Total		125,223
To same date 1865		298,825
Decrease		173,602

The following is a statement of coal transported on the Delaware & Hudson Canal for the week ending July 21st:

	WEEK.	SEASON.
Delaware and Hudson Canal Co.	41,480	634,130
Pennsylvania Coal Co.	946	10,826
Total tons	42,426	644,956

For the same period last year:

Delaware and Hudson Canal Co	17,750	377,646
Pennsylvania Coal Co	355	18,307
Total tons	18,105	395,953

PRICES OF COAL BY THE CARGO.

AT NEW YORK, JULY 26, 1866.

Schuylkill Red Ash by Boat Load		$7 50@	$7 75
" Chestnut, " "		5 25	5 50
" White Ash Lump		7 00	7 25
" Steamboat		7 00	7 25
" Broken		7 00	7 25
" Egg		7 25	7 50
" Stove		7 25	7 50
" Chestnut		5 25	5 50
Lehigh White Ash Lump		7 75	8 00
" Steamboat		7 75	8 00
" Broken		7 75	8 00
" Egg		7 75	8 00
" Stove		7 75	8 00
" Chestnut		7 00	

SCRANTON COAL AT ELIZABETHPORT.

Lump	$6 70@	— —
Grate	7 00	— —
Prepared	7 00	7 50
Chestnut	5 75	— —

LEHIGH COAL AT ELIZABETHPORT.

Lump	$8 00@	— —
Steamboat and Broken	7 75	— —
Egg and Stove	8 00	— —
Chestnut	7 00	7 25

AT PHILADELPHIA JULY 25, 1866.

Schuylkill Red Ash Prepared	$6 00@	$6 25
" Chestnut	4 25	. . . .
" White Ash Lump and Steamboat	5 75	6 00
" Broken	6 00	. . . .
" Egg and Stove	6 00	. . . .
" Chestnut	4 50	. . . .
Locust Mt. Lump, Steamboat	6 00	. . . .
" Broken	6 00	. . . .
" Prepared	6 00	6 25
" Chestnut	4 50	. . . .
Lorberry Coal	6 25	. . . .
Franklin, (Lykens Valley)	6 50	. . . .
Lehigh Lump, Steamboat and Broken	. .	. . . .
" Prepared	. .	. . . .
" Chestnut	. .	. . . .
Broad Top	6 00	. . . .

AT BALTIMORE JULY 25, 1866.

Wilkesbarre & Pittston W A., wholesale	$7 50@	$7 75
" " " retail	8 50	8 75
Lykens Valley & Sunbury R A., wholesale	7 50	7 75
" " " retail	8 50	8 75

GEORGE'S CREEK AND CUMBERLAND COAL.

Run of mine, f. o. b. at Locust Point	$6 00@	. .
At Georgetown	5 50	. .

COAL FREIGHTS

FROM PORT RICHMOND, PHILADELPHIA.

Albany (&towing)	$1 60@—	—	Neponsett	—@—	—
Bangor	3 00	—	Newark	—	—
Bath	—	—	New Bedford	2 50	—
Bedford	—	—	Newburyport	—	—
Belfast	3 00	—	New Haven	2 25	—
Boston	2 75	3 00	New London	2 50	—
Bridgeport	2 30	—	Newport	—	—
Cambridgeport	3 12	—	Newport, R. I.	2 50	—
Charleston	3 00	—	New York	1 60	—
Chelsea	3 00	—	Norwalk	2 25	—
Commercial Point	—	—	Norwich	2 50	—
Cohasset Narrows	—	—	Parkshell	—	—
Davenport	—	—	Pawtucket, & tow'g	2 50	—
Dighton	—	—	Portland	2 75	3 00
Dorchester Point	—	—	Portsmouth	3 25	—
East Greenwich	—	—	Providence	2 50	—
Fall River	2 50	—	Poughkeepsie, & t'g	1 60	—
Fredericksburg	1 75	—	Quincy Point	3 00	—
Gardner	—	—	Richmond	—	—
Georgetown	—	—	Rockport	—	—
Gloucester	—	—	Roxbury	3 25	—
Hartford	—	—	Saco	3 62	—
Hudson	1 90	—	St. Johns (in gold)	1 25	—
Hingham	—	—	Salem	2 75	2 90
Kennebrook Point	—	—	Salisbury	3 25	—
Lynn, and disc'ge	3 00	—	Stamford	—	—
Malden	—	—	Troy	1 90	
Marble Head	—	—	Washington, D. C.	1 60	—
Medford	3 55	—	West Chester	—	—
Mystic	—	—	Weymouth	—	—
Nantucket	3 00	—	Yarmouth	—	—

FROM BALTIMORE

To Philadelphia	$1 75@—	—	Boston	3 25@—	—
New York	2 75	—			

FREIGHTS FROM ELIZABETHPORT.

New York	$ 70@—	—	Portland	2 25@—	—
Fall River	1 75	—	Newburyport	2 40	—
Newport	1 75	—	New London	1 10	—
Boston	2 25	—	Pawtucket	2 00	—
Norwich	1 75	—	Taunton	1 80	—
Providence	1 75	—	New Haven	1 30	—
Norwalk	1 30	—	Portsmouth	2 40	—
Middletown	1 60	—	New Bedford	1 80	—
Hudson	1 10	—	Bridgeport	1 30	—
Lynn	2 35	—	Hartford	1 85	—
Salem	2 25	—	Albany	1 15	—

FREIGHTS FROM GEORGETOWN OR ALEXANDRIA.

To Philadelphia	$2 00	—	Boston	3 25	—
New York	2 75	—			

The Pottsville *Miner's Journal* of the 21st has the following of statement of coal shipped during the preceding week :

	1865.		1866.		
	WEEK.	TOTAL.	WEEK.	TOTAL.	INC. DEC.
P. & R. R. R.	53.450	1,380,783	82,827	2.076.403	695.520
Schuyl. Can	21,567	304.861	37,590	667,155	362.295
L. Val. R. R.	25,026	682.965	50,310	988.831	305.866
Lehigh Can	30,405	294,800	4.650	384.578	89,778
Scranton Stb	19,450	463,055	23,806	546,075	83,020
" North	8,212	130,312	9,449	215.514	85.202
Penn. C. C.					
By R. Road		180,634	1.928	102.647 d	77,987
By Canal		108,000	706	98.802 d	9,198
Del & Hudson	24,608	359,896	44,286	592.650	232,754
Wy'mg South				200.960	200.960
" North				12,248	12.248
Shamokin	10,097	182.820	11.997	277.013	94.193
Treverton		11,219	1,608	25,187	13.968
Short Mt.		7.501	3,584	35.987	28,486
Franklin	351	12.887	7.593	32.296	19,409
Broadtop		113.954		125,954	11.975
	193.256	4,233.687	280.334	6.382,300	
			193.256	4,233.687	
			87,078	2.148.613	

CLEARFIELD COAL TRADE.

This coal field has been recently opened. The distance from the mines at Osceola, *via* the Tyrone and Pennsylvania Central Railroads to Philadelphia, is 242 miles, about the same distance as from Broad Top to Philadelphia. There are eight collieries in operation and ready to operate, and four more are under way which will soon be finished :

Sent for the week ending July 5.....1,828 02 tons.
do. do. July 12.....2,009 18 "

For two weeks.....3,838 00 tons.

The veins opened vary from four to six feet in thickness, and the coal is pronounced to be of an excellent quality of bituminous coal (not gas coal). An analysis of a sample from the six foot vein, made by Booth & Garret, of Philadelphia, gives the following result :

75–95 of fixed carbon.
21–70 of volatile matter.
2–35 of ash.

The following are the collieries now in operation :

NAME OF CORPORATION.	LOCATION.	PRESIDENTS.
Powelton Coal Company,	Powelton,	R. Hare Powell.
Clearfield " "	Osceola,	W. Smith, Man.
Moshannon "	"	David Knight.
John Miller's Colliery,	"	
John Nuttall's "	"	
Sackett & Bro's. "	"	—— Sackett,
Zeigler's "	Phillipsburg.	
Union Coal Company.	"	

The above are in operation with a capacity for shipping 1,500 tons daily. The following will be ready in a few months for business :

Beaver Branch Coal Co., Osceola, W. G. Audenried, President ; Madera Coal Co., Madera, Z. P. Boyer, President ; Williamson's Colliery and New York Coal Co., Phillipsburg.

FOREIGN MARKET REVIEW.

WEEKLY METAL REPORT.

LONDON, July 13th, 1866.

There is no life in any branch of the metal trade. Money continues too dear for speculator, and consumers only buy for their most pressing wants. The proposed armistice between Austria, Prussia, and Italy is most anxiously looked for, and would stimulate business if actually accepted.

IRON.—The reports from Staffordshire and Wales as to trade are very dull, and many establishments only work half-time. Prices tend in buyers' favor. Scotch pig iron has declined to 52s. 6d. cash.

COPPER.—Although the market is a shade firmer, there is very little business doing either in English or foreign, and there is such a difference between buying and selling prices that quotations are quite nominal.

TIN.—The position of the market remains unaltered. Straits has changed hands to a small extent, at £76 per ton. Banca nominally £79 to £80. English tin obtainable considerably under official prices.

TIN-PLATES are in good demand, with a stiffening tendency.

LEAD remains unaltered.

SPELTER.—After declining to £21, cash, has rallied, and a fair amount of business has been done at £21 10s. cash, and at £21 15s. for August. Special marks in outports £21 17s. 6d.

VON DADELSZEN & NORTH.

NEW YORK METAL MARKET.

(CORRECTED WEEKLY)

ANTIMONY	Regulus, ℔ lb	$00	14	@$ 00	15
	Crude	..	..	..	..
BORAX		..	34	..	..
BRIMSTONE		67	50	72	50
COPPER	Ingot..Lake Superior, ℔ lb., cash	..	31	..	31½
	Baltimore	..	31	..	31½
	Pig Chill	..	..	..	..
	Bolts	..	43	..	..
	Braziers	..	42	..	43
	Sheathing	..	45	..	..
	Yellow metal	..	33	..	..
IRON	Pig.....No. 1 Scotch, ℔ ton	47	00	50	00
	No. 1 American	46	00	48	00
	No. 2 "	45	00	..	..
	No. 2 Charcoal	..	..	..	..
	Bar.....Swedish, ordinary sizes	170	00	..	..
	Amer. and Eng refined	125	00	145	00
	" " common	115	00	120	00
	Rails, American currency	..	..	..	..
	" English gold	..	..	..	..
	Horse shoe iron	150	00	160	00
	Rods 5-8@3-16rd. and sq	130	50	185	00
	Band	155	00	..	..
	Nail rods, 5-8 and 3-16	122	50	185	00
	Hoops	160	00	225	00
	Sheets, Russian, ℔ lb	..	28	..	30
	" English "	..	6¼	..	9
	" American "	..	25	..	25½
	Boiler Plates, English	..	..	..	..
	" American	..	..	..	..
STEEL	Best cast in bars, war	..	26	..	..
	Best sheet cast, "	..	26	..	..
	Best cast circular saw plates 46 in	..	32	..	..
	Double shear steel, war	..	26	..	..
	Single " " "	..	23	..	..
	Montague & Co. C. S., in bars	..	23	..	..
	Round machinery cast	..	17	..	..
	Best German	..	17	..	..
	Government German	..	14	..	..
	Eagle German	..	16	..	..
	(L.) Blister, war	..	22	..	..
	W. Jessop & Sons, blister, war	..	20	..	..
	Double refined	..	28	..	..
	Stone Axe shapes	..	28	..	..
	Common blister	..	16	..	..
	2d quality sheet	..	23	..	..
	3d quality sheet	..	20	..	..
LEAD	American, per 100 lbs	..	..	..	..
	German.....Gold	7	25	7	50
	Spanish "	7	25	7	50
	English "	7	25	7	50
	Bar, per 100 lbs	11	50	..	..
	Pipe and sheet	11	44	..	..
TIN	Banca Gov., per 100 lbs. gold		20	..	..
	Straits		19⅜		19½
	English	20			20¼
TIN PLATES	IC 10-14 prime charcoal	15	50	..	..
	IX 10-14 " "	18	50	..	..
	IC 12-12 " "	16	00	..	..
	IX 12-12 " "	19	00	..	..
	IC 14-20 " "	16	50	..	..
	IX 14-20 " "	19	50	..	..
	IC 14-20 Roofing ch. 1st	14	75	..	..
	IC 14-20 " " 2d	13	75	..	..
	IC 14-20 " Coke	12	25	..	..
	IC 10-14 Coke	12	00	14	50
SPELTER	Lehigh, per lb., currency	..	12¼	..	..
	Foreign " gold	..	7¼	..	..
ZINC	Mussulman & Amer....gold	..	9½	..	..
SOLDER	No. 1	..	24	..	..
	No. 2	..	22	..	..
QUICKSILVER		..	80	..	..

LONDON METAL MARKET.

LONDON, July 6, 1866.

		£.	s.	d.	£.	s.	d.
COPPER	Best selected, per ton	89	0	0	@	..	..
	Tough Cake & Tile, per ton	86	0	0		..	..
	Burra Burra " "	90	0	0		..	..
	Copper wire, per lb	0	0	11¾		..	..
	" tubes, "	0	0	12¼		..	..
	Sheathing & Bolts, per ton	91	0	0		..	..
	Bottoms, " "	96	0	0		..	..
	Old (Exchange)	77	0	0		..	..
IRON	Bars Welsh in London	7	2	6	8	5	0
	Do. to arrive	7	0	0	7	5	0
	Nail rods	8	5	6	9	5	0
	Do. Stafford in London	8	10	6	8	17	6
	Bars " "	8	10	6	10	0	0
	Hoops " "	9	10	6	10	10	0
	Sheets, single	10	0	0	11	0	0
	Pig No. 1 in Wales	4	5	0	4	10	0
	Refined Metal, do	4	0	0	5	0	0
	Bars Common do	6	5	0	6	10	0
	Do. Merch. Tyne or Tees	7	10	0	..	..	..
	Do. Railway in Wales	6	0	0	6	5	0
	Do. Swede in London	10	10	0	11	0	0
	To arrive	11	0	0	..	..	..
	Pig No. 1 in Clyde	2	15	0	3	0	0
	Do. f. o. b. Tyne or Tees	2	9	6	..	..	..
	Do. Nos. 3, 4, f. o. b. Do	2	6	6	2	7	6
	Indian Charcoal Pigs, in Lond.	7	0	0	7	10	0
	Railway Chairs	5	10	0	5	15	0
	Do. Spikes	11	0	0	12	0	0
LEAD	English Pig Common	20	5	0	..	..	..
	Do. ordinary soft	20	15	0	..	..	..
	Do. (W. B.)	22	10	0	..	..	..
	Do. Sheet	21	10	0	21	15	0
	Do. Red Lead	23	10	0	24	0	0
	Do. White	27	0	0	30	0	0
	Do. Patent Shot	23	15	0	24	0	0
	Spanish	20	0	0	..	..	..
STEEL	Swedish in kegs, rolled, p ton	13	0	0	14	0	0
	Do. hammered	15	0	0	16	0	0
	Do. in faggots	16	0	0	16	10	0
	English Spring	19	0	0	23	0	0
QUICKSILVER	Per bottle	7	0	0	..	..	..
SPELTER	Foreign, per ton	22	10	0	..	..	..
	To arrive " "	22	10	0	..	..	..
ZINC	In Sheets	30	0	0	..	..	..
TIN	English Blocks	85	0	0	..	..	..
	Do. bars in barrels	86	0	0	..	..	..
	Do. refined	88	0	0	..	..	..
	Banca	78	0	0	..	..	..
	Straits	75	0	0	..	..	..
TIN PLATES	IC Charcoal, 1st qu., per box	1	10	0	..	..	..
	IX Do., 1st quality "	1	16	0	..	..	..
	IC Do., 2d quality "	1	8	0	..	..	..
	IX Do., 2d quality "	1	14	0	..	..	..
	IC Coke	1	4	0	..	..	..
	IX Do	1	10	0	..	..	..
	Canada Plates, per ton	13	10	0	..	..	..
	In London ; 20s. less at the works.						
YELLOW METAL	Sheathing, p lb	0	0	8½	..	..	..
	Sheets, per lb	0	0	8½	..	..	..

* At the works, 1s. @ 1s. 6d. less.

SALES OF ORES IN ENGLAND.

LEAD ORES.

DATE.	MINES.	TONS.	AMOUNT.	PURCHASERS.
June 20	—Stiperstones	6	£16 10 0	.....
29	—Isle of Man Min. Co.	100	22 16 0	Sims, Williams & Co.
July 4	—Stiperstones	50	11 17 6	Barry Port Co.
30	—Clara United	15	11 3 0	Sims, Willyams & Co
	—Bronfloyd United	42	12 10 3	Barry Port Co.

BLENDE.

DATE.	MINES.	TONS.	AMOUNT.	PURCHASERS.
June 26	—Great Laxey	100	£3 10 0	Attwood's Exec'rs.
30	— ditto	300	3 10 6	Vivian & Sons.

BLACK TIN.

DATE.	MINES.	T'S.	C. Q. LBS.	P. PER T.	AMOUNT.	PURCHAS'S.
June 30	—Gt. Wh. B.	22	18 0 27	.....	£808 1 2	.....
	—P'd-an-dr'a	9	14 0 11	.....	439 0 10	Bissoe.
	—Prosp. U'd.	10	1 1 21	£44 10 0	448 4 0	Chyand'r.
	— ditto.	0	9 3 1	28 0 0	13 13 0	ditto.

COPPER ORES.

SOLD AT TYACK'S HOTEL, CAMBORNE, JULY 5.

TOTAL PRODUCE.

MINES.	TONS.	PRICE.	MINES.	TONS.	PRICE.
Clifford Amal.	889..	£3.381 18 0	Nk. Roskear..	111..	£ 446 8 6
West Seton..	479..	2,049 13 0	South Tolgus..	85..	386 5 0
Carn Camb'ne.	291..	888 6 6	S. Condurrow.	70..	238 15 6
Wheal Basset.	186..	933 16 6	N. Grambler..	42..	200 8 0
East Pool....	153..	479 1 0	Wt. Stray P'rk	16..	66 0 0
South Frances.	134..	638 6 0	Crane.....	12..	53 2 0
Tolcarne	115..	406 10 0			

Average standard, £100 12 0 ; average produce, 6¾ ; average price per ton, £3 19 0 ; quantity of ore, 2,574 tons ; quantity of fine copper, 171 tons 9 cwts.; amount of money, £10,168 4 6.

Previous sale.—Average standard, £98 16 0 ; average produce, 7¼. Standard of corresponding sale last month, £107 13 0 ; produce, 6½.

BY WHOM PURCHASED :

NAMES.	TONS.	AMOUNT.
Vivian & Sons	508½	£2.165 10 2
Freeman & Co	224	1.184 1 6
Grenfell & Sons	283	1.506 16 10
Sims, Willyams & Co	324	1.039 3 6
Williams, Foster & Co	572½	2.392 17 2
Mason & Elkington	28	104 8 0
Bankart & Sons	11	13 4 0
Copper Miners' Company	119	514 6 0
Charles Lambert	221	689 11 4
Sweetland, Tuttle & Co	211	531 12 0
Total	2.574	£10.168 4 6

SAN FRANCISCO STOCK MARKET.

LATEST BY MAIL.

NAME.	FRIDAY, June 29. Open'g	Clos'g	Sales for week Ending June 29. Shares.	Amount.
Sierra Nevada	$ 2	$ 2	152	$ 343 00
Imperial	105	103	264	22.764 00
Gould & Curry	700	700	5	3.588 00
Chollar—Potosi	170	185	99	15,387 00
Yellow Jacket	687½	692½	125	77.246 00
Bullion	57	57	125	8.042 00
Crown Point	.....	.....	5	4.550 00
Belcher	162½	162½	102	18.249 00
Overman	23	21½	700	18.378 00
Ophir	207½	213	227	55,108 00
Hale & Norcross	.....	.....	7	8.810 00
Exchequer	.....	.....	.....	.....
Savage	900	895	14	12.995 00
Empire Mill	.....	.....	.....	.....
Alpha	.....	.....	8	1.67500
Lady Bryan	23⅛	23⅛	650	1.588 00
Daney	.....	.....	.....	.....
Confidence	47⅞	51	626	32,635 00
Baltimore Amer	.....	.....	.....	.....
De Soto	.....	.....	20	70 00
Kentucky Cop. Co	.....	.....	.....	.....
Golden Rule	.....	.....	.....	.....

LATEST BY TELEGRAPH.

SAN FRANCISCO, July 19.

Name.	Bid per foot.	Name.	Bid per foot.
Gould & Curry	750	Crown Point	775
Savage	900	Yellow Jacket	550
Chollar-Potasi	185	Belcher	150
Ophir	300	Alpha	...
Hale and Norcross	1300	Imperial per share	95

Patent Claims.

Interesting to Miners, Millmen, Metallurgists, Oil-Men and Others.

The following claims have recently been issued from the United States Patent Office :

56,378.—APPARATUS FOR TREATING ORES.—J. C. Coult and J. Roach, San Francisco, Cal. :

We claim, 1st, The pipe, C, connecting with a furnace and having a wide opening entering the condenser, E, thereby imparting a greater distribution of the fumes as they enter said condenser or water-tank, and equally spreading the fumes over the water, substantially as described and for the purposes set forth.

2d, The tank, E, with an inclined bottom, and the partitions, b, b, b, in the inverted tank or cover of the same, and the adjusting screws, F, F, attached thereto, substantially as described and for the purposes set forth.

3d, The perforated diaphragm, G, having sufficient openings to

(Continued on page 285.)

NEW YORK STOCK MARKET.

MINING.	July 21. BID.	ASKED.	July 23. BID.	ASKED.	July 24. BID.	ASKED.	July 25. BID.	ASKED.	July 26. BID.	ASKED.	July 27. BID.	ASKED.
Ada Elmore	.....	.....	.....	.....	3 00	3 50	3 00	3 50	3 10	.....	3 05	3 50
Altona	2 75	.....	.....	.....	.....	.....	2 75	.....	.....	.....	.....	.....
American Flag	1 00	.....	1 00	2 50	.....	2 00	1 00	2 00	1 00	2 00	1 00	2 00
Atlantic & Pacific	.....	2 50	1 00	2 50	1 25	2 50	1 50	2 50	1 25	2 50	1 00	2 50
Bates & Baxter Gold	1 00	2 00	.....	2 00	1 00	2 00	1 50	2 00	1 00	2 00	1 00	.....
Benton Gold	1 45	1 55	1 40	1 50	1 40	1 50	1 45	1 50	1 45	1 50	1 45	1 50
Bobtail Gold	.....	3 00	.....	3 00	.....	.....	.....	.....	.....	.....	.....	.....
Consolidated Gregory	19 30	19 90	19 75	19 90	19 70	20 50	20 50	21 25	21 00	21 50	20 50	20 75
Corydon	1 75	1 95	1 75	2 00	1 75	2 05	1 75	2 10	1 75	.....	1 90	2 00
Downieville Gold	69	70	65	67	67	69	60	68	62	69	74	80
Eagle Gold	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gold Hill	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grasss Valley Gold	.....	.....	50	.....	.....	.....	60	.....	.....	.....	.....	.....
Gunnell Gold	1 07	1 10	1 07	1 10	1 05	1 08	1 02	1 07	1 00	1 05	1 00	1 04
Gunnell Central	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Holman	36	37	35	40	35	36	36	37	35	38	35	36
Hope Gold	2 00	.....	1 75	.....	.....	.....	.....	.....	.....	.....	.....	.....
Keystone Silver	8	12	5	8	10	12	5	12	7	20	8	12
Kipp & Buell Gold	1 35	1 50	1 25	.....	1 30	1 75	1 35	1 50	1 25	1 75	1 35	1 50
Liberty Gold	.....	25	.....	.....	.....	.....	15	.....	.....	.....	.....	20
Liebig Gold	.....	.....	.....	.....	.....	.....	.....	.....	10	75	.....	60
Manhattan Gold	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New York	1 05	1 15	1 05	1 20	1 05	1 10	1 00	1 10	1 05	1 15	1 12	1 15
Oak Hill Gold	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2 00	.....
Quartz Hill	.....	5 00	4 00	4 20	4 10	4 25	4 10	4 15	4 00	4 50	4 05	4 10
Rocky Mountain Gold	.....	3 75	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Silver Eagle	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Smith & Parmelee Gold	8 50	8 75	8 10	8 70	8 25	8 70	8 10	8 20	8 10	8 45	8 20	8 40
Texas Gold	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Virginia City	.....	.....	.....	.....	.....	.....	.....	.....	.....	50	.....	50
Waddingham Gold	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Union Gold	.....	3 00	.....	.....	.....	.....	.....	.....	.....	3 00	2 00	.....
West Fellows Gold	.....	3 00	.....	2 00	.....	.....	.....	2 00	.....	1 75	.....	2 00
Caledonia Copper	3 50	.....	.....	.....	.....	.....	.....	.....	4 00	.....	3 50	.....
Hancock Copper	23 00	.....	.....	.....	24 00	.....	.....	.....	.....	25 50	.....	.....
Canada Copper	.....	1 00	.....	1 00	.....	1 00	.....	1 00	.....	1 00	.....	1 00
Evergreen Bluff Copper	.....	.....	.....	.....	.....	.....	.....	.....	.....	10 00	.....	.....
French Creek Copper	.....	1 00	.....	.....	.....	1 00	.....	.....	.....	1 25	.....	1 25
Hilton Copper	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2 00
Aztec Copper	2 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Montana Gold	.....	75	.....	1 05	.....	75	.....	.....	30	40	30	40
Knowlton Copper	.....	.....	.....	.....	.....	.....	.....	.....	.....	5 00	.....	5 00
Mendota Copper	.....	.....	.....	.....	.....	.....	.....	.....	.....	3 00	.....	.....
Minnesota Copper	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Norwich Copper	.....	.....	.....	.....	.....	.....	.....	.....	.....	1 50	.....	.....
Ogima Copper	.....	.....	.....	.....	.....	.....	.....	.....	.....	6 00	.....	.....
Deubo Lead	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Phœnix Lead & Mining Co	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Redwood Lead	.....	.....	.....	.....	.....	.....	.....	2 00	.....	2 00	.....	.....
Wallkill Lead	60	95	65	95	80	1 00	80	90	60	90	75	90
Columbian Coal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Schuylkill Coal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lake Superior	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Copake Iron	.....	1 00	.....	1 00	.....	.....	.....	.....	.....	.....	.....	90
Foster Iron	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Annular Drill	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Perry & Peop. S. Min. Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rockland Copper	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5 00	.....
Isle Royal Copper	9 00	12 00	.....	12 00	.....	.....	.....	.....	.....	11 00	.....	16 00
British Amer. Coal. Pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	5 00	.....	.....
Rutland Marble	12 00	.....	12 00	18 00	.....	.....	12 00	15 00	12 00	18 00	12 00	18 00
OIL STOCKS.												
Bennehoff Run	5 55	5 65	5 15	5 25	5 35	5 40	5 45	5 60	5 45	5 60	5 70	5 75
Buchanan Farm	23	27	24	28	25	27	25	27	20	27	24	27
Central	2 00	2 45	2 35	2 45	2 00	2 45	2 25	2 40	2 00	2 40	2 00	2 35
Excelsior	30	34	30	35	30	31	25	33	28	31	20	30
First National	5	.....	5	.....	5	.....	5	.....	.....	.....	5	15
Ivanhoe	2 25	.....	2 25	.....	2 25	.....	2 25	.....	.....	2 00	2 00	2 25
N. Y. & Alleghany	4 60	5 00	4 75	4 90	4 75	5 00	4 85	5 00	4 80	5 00	4 75	5 00
Northern Light	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2 00
Oil Creek of N. Y	30	45	30	45	30	40	25	35	.....	.....	60	.....
Pit Hole Creek	2 10	2 30	2 10	2 25	2 05	2 20	2 00	2 15	2 00	2 05	2 10	2 20
Rynd Farms	.....	25	20	25	.....	.....	20	.....	20	.....	20	25
Shade River	.....	50	.....	45	25	40	30	40	.....	40	10	20
United States	7 40	7 50	7 15	7 45	7 30	7 35	7 15	7 40	7 15	7 45	7 80	8 00
Palmer Petroleum	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Union	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Empire and Pit Hole	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Venango & Pit Hole	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Allen Wright	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bergen Oil & Coal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bennehoff & Pit Hole	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Equitable	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fee Simple	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Forest Co. Petroleum Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gt. Western Consolidated	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Guild Farm	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Heydrick Bros	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Homowack	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lilly Run	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oak Shade Petroleum	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Penn. Oil Creek	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
President	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Southard	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sherman & Barnsdale	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
FREE LIST.												
Bennehoff Run Oil	1 35	1 40	1 25	1 50	1 25	2 00	.....	.....	.....	2 50	.....	1 20
Brevoort	.....	.....	1 00	.....	.....	.....	1 50	2 00	.....	2 00	1 00	1 50
Bliver	.....	.....	50	.....	.....	.....	.....	2 00	.....	.....	.....	.....
Brooklyn	.....	1 00	.....	50	.....	50	.....	50	.....	50	.....	50
Bradley	.....	10	.....	8	.....	10	.....	8	.....	.....	.....	5
Bemis Heights	.....	.....	3 00	.....	.....	.....	3 00	.....	3 00	.....	.....	.....
Cherry Run Petroleum Co	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cherry Run Special	.....	35	.....	30	.....	30	.....	30	.....	40	.....	30
Clinton Oil	1 30	2 00	1 10	.....	.....	.....	1 10	.....	1 10	1 75	1 20	1 75
Consolidated (New York)	.....	.....	.....	.....	.....	1 50	.....	.....	.....	.....	.....	.....
Empire City Pet'm Co	.....	40	.....	28	.....	.....	.....	.....	.....	10	.....	30
Eclectic Oil	.....	.....	.....	.....	.....	2 00	.....	.....	.....	.....	.....	.....
Enniskillen	.....	.....	.....	2 00	.....	.....	.....	.....	.....	.....	.....	2 00
Germania	8	.....	8	8	8	10	.....	15	.....	.....	5	15
Hamilton McClintock	.....	1 25	.....	1 50	.....	.....	.....	.....	.....	.....	.....	2 00
Heydrick	.....	.....	20	25	.....	25	.....	25	20	25	.....	.....
High Gate	.....	15	.....	15	.....	.....	.....	.....	.....	.....	.....	15
Inexhaustible	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	.....	.....
Liberty	.....	.....	.....	.....	.....	.....	.....	10	.....	15	.....	15
Mt. Vernon	.....	.....	.....	.....	.....	.....	.....	.....	.....	25	.....	25
Manhattan	.....	.....	.....	25	.....	.....	.....	.....	.....	25	15	25
National	.....	.....	3 00	.....	1 00	.....	.....	.....	.....	.....	1 00	.....
New York & Newark	.....	.....	.....	10	.....	.....	.....	.....	.....	.....	.....	.....
New York, Phil. & Balt	.....	15	.....	15	.....	15	.....	.....	.....	25	8	10
Second National	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	.....
Oceanic	.....	20	8	10	.....	.....	5	9	5	9	5	.....
Pepper Well	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pit Hole, No. 2	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	.....	.....
Pet. Consolidation	.....	.....	.....	.....	.....	.....	.....	10	.....	10	4	10
Union	2 00	.....	2 75	3 25	2 00	3 00	2 50	3 00	3 00	.....	2 75	.....
United Petroleum Farms	.....	25	20	25	20	22	20	25	20	25	20	23
West Va. Oil & Coal Co	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	24
Webster	25	35	20	30	20	28	20	25	30	28	20	.....

BOSTON STOCK MARKET.

Reported for the Journal of Mining by Lombard & Co., 99 State Street, Boston.

COAL.

Companies.	July 20. BID.	ASKED.	July 21. BID.	ASKED.	July 23. BID	ASKED.	July 24. BID.	ASKED.	July 25. BID.	ASKED.	July 26. BID.	ASKED.
Belmont	2 75	3 50	2 75	3 50	2 75	3 50	2 75	3 50	2 75	3 50	2 75	3 50
Collins	.....	80 00	.....	80 00	.....	.....	.....	80 00	.....	80 00	.....	80 00
Cape Breton	2 75	3 75	2 75	3 75	2 75	3 75	2 75	3 75	2 75	3 75	2 75	3 75
Eagle Hill Mutual	50	1 00	50	1 00	.....	75	1 00	75	1 00	75	1 00	75
Franklin	.....	3 00	.....	3 00	.....	.....	.....	3 00	.....	.....	3 00	.....
Gilberton	25 00	29 00	25 00	30 00	25 00	30 00	25 00	30 00	25 00	25 00	28 00	25 00
Glenville	2 00	2 50	2 00	2 50	2 00	2 50	2 00	2 50	2 00	2 50	2 00	2 50
Harleigh	50 00	60 00	50 00	60 00	50 00	60 00	50 00	60 00	50 00	60 00	50 00	60 00
Lackawana	5 00	7 00	5 00	7 00	5 00	7 00	5 00	7 00	5 00	7 00	5 00	7 00
Lorberry	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Locust Dale	17 00	19 00	17 00	19 00	17 00	19 00	17 00	19 00	17 00	19 00	17 00	19 00
Mammoth Vein	11 00	12 00	11 00	12 00	11 00	12 00	11 00	12 00	10 75	11 50	10 50	11 00
Mount Pleasant	28 00	30 00	28 00	30 00	28 00	30 00	28 00	30 00	28 00	30 00	28 00	30 00
New England	26 00	30 00	26 00	30 00	26 00	30 00	26 00	30 00	26 00	30 00	26 00	30 00
Short Mountain	22 25	22 60	22 00	22 60	21 00	22 00	20 00	21 00	20 00	21 00	20 00	21 00
Summit Branch	13 00	14 00	13 00	14 00	13 00	14 00	13 00	13 50	13 00	13 50	13 50	14 00

MINING.

Albany and Boston	.....	.....	3 00	.....	.....	.....	.....	.....	.....	.....	1 25	.....
Bay State.....asst. pd	.....	11 62	10 87	11 00	10 75	11 00	11 00	.....	11 25	.....	12 00	.....
Boston	.....	.....	50	1 00	.....	.....	.....	.....	.....	.....	.....	.....
Canada	.....	1 00	.....	1 00	.....	.....	.....	.....	.....	1 00	.....	1 00
Concord	3 00	4 00	3 25	4 00	3 00	.....	3 12	3 25	3 12	4 00	3 25	.....
Copper Falls	39 12	.....	39 50	41 00	39 00	40 50	39 00	40 00	40 00	41 00	40 00	41 00
Franklin	40 75	41 00	40 50	41 00	40 50	41 50	40 50	41 00	.....	40 50	40 75	41 50
Hancock	.....	24 50	24 25	25 00	24 50	25 00	24 50	25 00	24 87	.....	26 00	26 50
Humboldt	4 00	.....	.....	4 00	4 00	4 50	3 50	4 50	3 00	3 50	.....	4 00
Huron	38 00	.....	.....	.....	38 00	40 00	.....	.....	39 75	40 00	39 00	41 00
Isle Royal	8 00	.....	.....	9 00	9 00	12 00	8 00	.....	10 50	12 00	10 00	12 00
Menard	2 00	.....	1 75	3 00	2 00	2 50	1 75	.....	1 75	.....	1 87	2 50
Minnesota	6 00	8 00	.....	.....	6 00	.....	6 50	9 00	8 00	9 00	9 00	12 00
National	.....	18 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	18 00
Petherick	5 25	5 37	5 25	5 37	5 25	5 37	5 00	5 25	5 25	5 37	5 12	5 37
Pewabic	34 00	.....	34 00	36 00	34 00	35 00	34 00	35 00	34 00	35 00	34 00	35 00
Phœnix	8 00	.....	.....	12 00	7 00	10 00	7 00	.....	.....	12 00	.....	.....
Pittsburg	.....	47 00	.....	.....	.....	.....	.....	.....	.....	47 00	.....	47 00
Pontiac	.....	1 37	.....	1 50	1 00	1 37	1 00	.....	1 00	1 50	1 00	1 50
Quincy	.....	45 25	45 00	46 00	.....	44 00	43 50	46 00	44 00	.....	43 50	45 00
Rockland	5 00	6 00	5 25	5 87	5 50	6 00	5 87	6 00	5 87	6 00	6 12	.....
South Side	1 62	1 75	1 50	1 75	1 63	1 75	1 25	1 62	1 50	1 75	1 62	1 75
Star	1 62	2 00	1 50	2 00	1 50	2 00	1 50	2 00	1 50	2 00	.....	2 00
Superior	.....	.....	.....	3 25	2 00	3 25	2 50	3 25	2 50	.....	3 00	.....
Toltec	1 00	.....	1 00	.....	1 00	7 50	.....	.....	1 00	7 50	2 00	.....
Winthrop	1 00	.....	1 12	.....	1 12	.....	.....	1 7-	.....	.....	1 00	2 00
Consolidated Gregory Gold	18 75	19 00	19 25	20 00	19 75	20 00	21 00	23 00	21 00	20 00	21 00	21 25
Quartz Hill Gold	4 00	4 25	4 00	4 25	4 00	4 25	4 05	4 25	4 05	4 25	4 00	4 10
Smith & Parmelee Gold	8 50	9 00	8 50	9 00	8 50	9 00	8 25	9 00	8 20	8 50	8 10	8 20

PETROLEUM

Beebe Farm	4 00	.....	4 00	.....	4 00	.....	4 00	.....	4 00	.....	4 00	.....
Boston and Kentucky	.....	20	.....	20	.....	20	.....	20	.....	20	.....	20
Boston Oil Creek Land Co	15	50	15	50	15	50	15	50	15	50	15	50
Boston Petroleum Oil Co	50	.....	50	.....	50	.....	50	.....	50	.....	50	.....
Botolph Oil Well Co	1 60	1 50	1 00	1 50	1 00	1 50	1 00	1 50	1 00	1 50	1 00	1 50
Crescent Petroleum Co	.....	1 00	.....	1 00	.....	1 00	.....	1 00	.....	1 00	.....	1 00
Everett Oil Co	7	10	7	10	7	15	7	15	7	15	7	15
" " (Pref. Stock)	.....	1 00	.....	1 00	.....	1 00	.....	1 00	.....	1 00	.....	1 00
Farrar	4 00	5 00	4 00	5 00	4 00	5 00	4 00	5 00	4 00	5 00	4 00	5 00
Fuller Farm	16	25	16	25	16	25	16	25	16	25	15	30
Great Basin	5	10	4	.....	5	10	7	10	5	15	5	15
Indian Spring	30	45	19	25	15	30	15	30	15	30	15	30
Mass. and Oil Creek	50	1 00	75	90	65	80	60	75	70	80	70	80
New England	8	13	8	13	8	15	10	15	10	15	10	15
New York and Boston	.....	30	.....	30	.....	30	.....	30	.....	30	.....	30
Pepper Petroleum	2 40	.....	2 50	.....	2 50	3 00	2 80	3 25	2 90	3 25	3 00	3 50
Pittsburgh and Boston	5	10	10	20	10	20	15	25	15	25	15	25
Tremont	2 00	3 50	2 00	3 50	2 00	3 50	2 00	3 50	2 00	3 50	2 00	3 50
Suffolk and Oil Creek	.....	10	.....	10	.....	.....	.....	10	.....	.....	.....	10
Winthrop	2	15	2	15	2	15	2	15	2	15	2	15
Independ. of U. S. & C.W.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New York Companies.												
Bennehoff Run	5 40	6 00	5 55	5 90	5 55	5 90	5 40	5 60	5 40	5 60	5 45	5 50
Bergen Oil and Coal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bradley	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Buchanan Farm	25	27	25	27	25	27	24	27	24	27	25	27
Central	2 00	2 20	2 00	2 20	2 00	2 20	2 00	2 20	2 20	2 35	2 00	2 25
Cherry Run Special	30	35	30	35	30	35	30	35	20	30	20	30
Consolidated	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Empire City	.....	30	.....	30	.....	30	.....	28	.....	28	.....	28
Empire and Pit Hole	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Excelsior	33	35	30	35	30	35	30	35	30	35	28	32
Northern Light	.....	2 50	.....	2 50	.....	2 50	.....	2 50	.....	2 50	.....	2 50
Oceanic	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oil Creek	35	45	35	45	35	45	35	45	35	45	30	40
Palmer Petroleum	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
President	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pit Hole Creek	2 05	2 25	2 10	2 20	2 10	2 20	2 05	2 15	2 10	2 25	2 00	2 25
Rynd Farm	20	30	20	30	20	30	20	30	20	30	20	30
Union	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Webster	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stewart's Run	20	25	20	25	20	25	20	25	20	25	20	25
United States	7 60	8 00	7 40	7 60	7 40	7 60	7 30	7 50	7 20	7 50	7 20	7 20

PRICES OF ASSAYING IMPLEMENTS.*

[CORRECTED WEEKLY.]

Smelting Furnaces	$35 00@	40 00
Cupelling "	35 00@	40 00
Scales	10 00@	30 00
Assay Balances and Weights	100 00@	200 00
Plumbago Crucibles	25@	1 50
Paris "	15@	1 25
Porcelain Evaporating Dishes	25@	5 00
Fire Tongs	75@	3 50
Hammers	1 00@	2 50
Funnels	15@	1 00
Litmus Paper, quire	1 00@	1 25
Ingot Moulds	1 25@	3 00
Flasks, Bohemian Glass	15@	1 00
Sand Baths, Iron	25@	1 00
Pliers	50@	2 00
Mortar and Pestle, Iron, Agath, etc	50@	20 00
Lamps, Gas and Alcohol	75@	5 00
Blowpipes	50@	3 00
Hydro-Oxygen Blowpipes	25 00@	125 00
Pincers, or Cutting Plyers	75@	1 50
Glass Tubes, German, etc., per lb	75@	1 50
Muffler	50@	1 50
Anvils	1 00@	2 00
Cupel Moulds	3 50@	5 00
Cupels, per doz	50@	3 50
Bone Ash, per lb	25@	50
Test Lead, "	60@	75

* These articles can be procured at the stated rates, by sending order, with remittance, to

WESTERN & COMPANY, 37 Park Row.

CHEMICALLY PURE PREPARATIONS USED IN THE VOLUMETRIC ASSAY.

Acid, Acetic	$0 75	oz
" Arsenious	0 05	lb
" Hydrochloric	0 50	oz
" Nitric	0 60	lb
" Oxalic	0 20	oz
" Sulphuric	0 75	lb
Ammonia	0 60	lb
Baryta, Carbonate	0 20	oz
" Hydrate	0 40	oz
" Nitrate	0 12	oz
Barium, Chloride	0 12	oz
Copper, Sulphate	0 10	oz
Iodine	0 75	oz
Iron, Sesquichloride, Cryst	0 25	oz
Lead, Nitrate	0 10	oz
Mercury, Peroxide	0 20	oz
" Protonitrate	0 25	oz
" Chloride	0 20	oz
Potassa, Carbonate	0 25	oz
" Bichromate	0 15	oz
" Bichromate, Fused	0 20	oz
" Chromate	0 15	oz
" Hydrate	0 40	oz
" Ferrocyanide	0 25	oz
" Permanganate	0 18	oz
" Sulphate	0 10	oz
Silver, Nitrate	Gold 1 10	oz
Soda, Acetate	0 10	oz
" Carbonate	0 10	oz
" Hydrate	0 20	oz
" Phosphate	0 10	oz
Sodium, Chloride	0 10	oz

UNITED STATES SECURITIES.

Reported for the Journal of Mining by Messrs. MEIGS, VON SEYBOLD & CO., No. 4 Broad st., New York.

Friday Evening.

LOANS. INTEREST PAYABLE IN GOLD.	AUTHORIZING ACTS.	AMOUNT OUTSTANDING.	RATE.	PRIN. PAY.	INTEREST.	WHEN PAYABLE.		OFF. PER CENT.	ASKED PER CENT
Registered Bonds.....	28 January, 1847	$9,415,250	6	1867	.....	Jan.	July.	126	.....
Coupon "								.....	.....
Registered Bonds.....	31 March, 1848	8,908,342	6	1868	.....	Jan.	July.	123¾	124
Coupon "								124	.....
Registered Bonds.....	22 June, 1860	7,022,000	5	1871	.....	Jan.	July	103	.....
Coupon "								.....	.....
Registered Bonds.....	14 June, 1858	20,000,000	5	1874	.....	Jan.	July.	99	.....
Coupon "								100	.....
Bonds, March 3, 1863		.....	6	1881	.....			.....	.....
Oregon War Debt		1,016,000	6	1881	.....	Jan.	July.	.....	.....
Registered Bonds.....	8 Feb. & 17 July & Aug., 1861	282,295,500	6	1881	.....	Jan.	July.	109	109¼
Coupon "								109⅛	109⅛
Registered "	25 February, 1862 (5-20's)	514,780,500	6	1882	.....	May	Nov.	104⅞	105
Coupon "								.....	.....
Registered "	(5-20's) new issue	100,000,000	6	1884	.....	May	Nov.	105	.....
Coupon "								105¼	105½
Bonds, March 3, 1865	(5-20s)	80,734,500		1885	.....			.....	.....
Registered "	(10-40's)	171,219,100	5	1904	.....	Mar.	Sept.	98⅛	98⅝
Coupon "								98½	98⅝
Total April 1									

LOANS. INTEREST PAYABLE IN LAWFUL MONEY.	RATE.	AMOUNT OUTSTANDING.	PRINCIPAL PAYABLE.	INTEREST.	WHEN PAYABLE.		OFF.	ASKED.
AUTHORIZING ACTS.								
Bonds, Cent'l P. R. R. Co., July 2, 1864	6	$2,362,000 00	1895	.....	Jan.	July		
Bonds, Union P. R. R. Co., July 2, 1864	6	2,130,000 00	1895	.....				
Temporary Loan	4		10 days' notice	.....				
Temporary Loan	5	124,561,486 00	10 days' notice	.....				
Temporary Loan	3		10 days' notice	.....				
Certificates of Indebtedness, March 1, 1862	6	43,025,000 00	1 yr from date	.....	1 yr. fr. date			
1 and 2 Years' Notes, March 3, 1863	5	.....	.....	.....	1 yr. fr. date			
3 Years' Compound Interest Notes (March 3, 1863 / June 20, 1864)	6	162,012,140 00	3 yrs from date	.....	At maturity			
3 Years' Treasury Notes (June 30, 1864 / March 3, 1865)	7.3	.....	3 yrs from date	.....	Aug.	Feb.	103¾	103½
3 Years' Treasury Notes, March 3, 1865	7.3	812,221,600 00	3 yrs from date	.....	June	Dec	103¾	103⅞
3 Years' Treasury Notes, March 3, 1865	7.3	.....	3 yrs from date	.....	July	Jan.	103¾	104
Aggregate of Debt Bearing Lawful Money Interest. April 1				Total Interest				

(Continued from page 283.)

equal the opening of the pipe, C, where it enters the condenser, E, as before stated, likewise the water bottom, G and G', over which the fumes collect and are drawn into a fan or pump, also giving a water-bottom, H, to the fan or pump, thereby bringing the fumes again in contact with the water for a long distance, and extracting all that it may be desirable to collect before allowing an escape into the chimney, substantially as described and for the purposes set forth.

56,380.—PUMP FOR DEEP WELLS.—Benjamin Crawford, Alleghany, Pa.:

I claim, 1st. The detached rod, t, in combination with the lower valve, q, for the purpose of keeping the lower valve closed on the down-stroke of the piston.

2d. The combination and arrangement of the lever, y, and valve-rod, t, with the cam, a, and pendant, d, for raising and lowering the valve-rod, t, to relieve the lower valve, q, of its pressure when the up-stroke begins, and hold it down on the commencement of the down-stroke, substantially as described.

3d, The combination of the check-valve, h, and gas-pipe, j, e, with the working valve of a pump, constructed and arranged substantially as and for the purposes hereinbefore described.

4th, In its arrangement with the devices described in the third claim, the trap, c, in the flow-pipe, to prevent the passage of gas in that direction, substantially as described.

56,387.—PUMP.—Samuel S. Durbon, Lebanon, Ind.:

I claim the tubular-valve seats, 6, 6, the spindle gum valves, 7, 7, the self-adjusting leverage, 13, with valves, 15, 15, and self-adjusting gum-piston, composed of 1, 2, and 3, and the elliptic, L, with the eccentric L', all arranged and operating substantially as and for the purpose set forth.

56,388.—FLASK FOR CASTING STEEL INGOTS.—Zoheth Sherman Durfee, Pittsburg, Pa.:

I claim as my invention the mode of casting of ingots of steel or other metals, by pouring or tapping such metal upon a piston in a mold so arranged and constructed that, as the metal is continuously introduced, the piston may be caused or permitted as continuously to descend and be followed by the metal, while at the same time the metal already poured, or the greater part thereof, remains at the same or nearly the same height in the mold, that portion successively being introduced flowing through that already near the surface of the piston as the piston gradually descends in the mold.

56,414.—PISTON FOR DEEP-WHEEL PUMPS.—J. W. Hoagland, New Brunswick, N. J.:

I claim the combination of valve, G, rod, C, shoulder, B, neck, D, guards, I, and walls, E, arranged with a pump-cylinder, and operating in the manner and for the purpose herein specified.

56,433.—QUARTZ MILL.—Albert Moore, San Francisco, Cal.:

1st, In combination with the radial feeding furrows, B, B, B', I claim the plain surface beyond the ends of the furrows, substantially as described for the purposes set forth.

2d. The manner of breaking the joints in constructing and laying the shoes and dies, so that no continuous straight lines shall be employed from the feed centre of the muller to its circumference, substantially as described and for the purpose set forth.

56,435.—PUMP FOR DEEP WELLS.—W. E. Morrison and W. L. Betts, Funkville, Pa.:

We claim attaching to the piston or sucker-rod of a pump, and above the upper valve secured to it, a perforated receiver, substantially as herein described and for the purpose specified.

56,480.—ORE AND TIMBER CAR FOR MINES.—George Williams, Sterling Terry, Colorado:

I claim, 1st, The construction of the doors with a wider portion, b, to adapt them to be supported by the sides of the car, substantially as described.

2d, A car constructed with end doors adapted to be folded over the top, for the purpose of converting it into a timber car.

3d, In combination with the above a trigger, C, provided with an inward projection adapted to be tripped by the post, D.

56,487.—QUARTZ MILL.—Smith W. Bullock, Elizabeth, N. J., assignor to the Bullock Ore Dressing Machine Company, New York City. Ante-dated July 3, 1866:

I claim, 1st, The combination of the rotating-trough, D, with the crushing wheels, G, G, and gear wheels, E and F, so as to govern the rotary motion of the trough whilst its vertical action is independent of and disconnected from the gear wheels.

2d, The application of springs to the adjustable bed, so arranged as to form a binding link or tie between the supports of the crushing wheel, G, G, and the supports of the trough, D, each of the several features being arranged and operating substantially as and for the purposes herein set forth.

Special Scientific Brevities.

☞ At a recent trial of carriages for 12 ton guns, made by the English Admiralty, the best carriage was one which was a close copy of the American monitor gun carriage, an invention of Captain Ericsson. The further important fact deduced was that just twice the number of rounds could be fired with round shot as with rifled bores, in a given number of minutes. This is equivalent to having twice as many guns on board, and thus the American smooth-bore system receives one of its strongest arguments from a trial by an English Naval Committee.

☞ The glacial theory is now extended to the moon. The theory rests on a comparison of stereoscopic views of the moon and of the Alps. The magnifying power of the telescope brings the moon optically within 240 miles of us, and at the same distance the alternations of rock and ice on some of the Swiss Alps can be detected with the naked eye.

☞ Magnesium is made in Boston from dolomite or magnesian limestone, by the Sonstadt method. The principal use for the metal is to burn for light, the actinic power of which is 1-36th that of the sun, though the intensity of the light is 1-525th that of the sun.

☞ By mixing 1,368 grains of sulphocyanide of ammonium with an equal weight of water at 17 deg. centigrade, Mr. F. Clowes succeeded in producing a cold of 12 deg. centigrade. The temperature of the air was the same as that of the water employed.

☞ It has lately been discovered by a German chemist that a most beautiful scarlet or purple dye may be produced from theine. This substance occurs in the leaves of a species of horse-chestnut and holly which grow in Brazil, as well as in tea.

☞ Coal oil is a better article for preserving sodium and potassium than naphtha. In coal oil, soda keeps its lustre for months and years, while in the purest naphtha it is dimmed in a few days.

☞ Mr. Rennie succeeded in boiling an egg by heat derived by motion. He placed it in a vessel containing 10 lbs. of water, and which was made to revolve 232 times in a minute.

☞ Carbonic acid under the influence of the electric spark, splits up into carbonic oxyd and oxygen, which latter is strongly ozonized.

☞ Sawdust mixed with tar, moulded and calcined in a close furnace, could be utilized like charcoal, in laboratories and kitchens.

☞ The strength of the hydraulic cement made from magnesian limestone is in direct proportion to the amount of magnesia.

☞ Pine bark reduced into a pulp, and bleached by different processes, makes a paper of first quality.

All Sorts.

☞ The following composition is proposed as a substitute for gunpowder: Chlorate of potash, 56 parts; yellow prussiate of potash, 28 parts; starch, 4 parts; sulphur, 7 parts; charcoal, from 2½ to 3 parts.

☞ The sound produced by some fishes is caused by muscular vibrations, strengthened by transmission to a pneumatic bladder. A foreign *savan* claims to have established the fact that fishes have voice.

☞ The making of soda is a long process. But it has been found that the contact of steam with salt water will produce caustic soda and hydrocholoric acid, and the process may be simplified.

☞ The bodily temperature of the inhabitants of the tropics is about one degree higher than in the temperate zones, fluctuating between one and two degrees within the twenty-four hours.

☞ Perhaps every one does not know that beeswax rubbed on when the iron is moderately heated, and the iron smartly rubbed on a woolen cloth, will remove rust entirely.

☞ A given weight of the metal magnesium yields the most intense light, when burned, of any known material substance. This metal is the base of all the salts of magnesia.

☞ The sugar-cane contains about ninety per cent. of sweet juice, and of this quantity less than sixty per cent. is obtained in extraction.

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"	100 "	15 00
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No.	Diameter of Steam Cylinder.	Diameter of Water Cyl. linder.	No. Revolutions.	No. Gallons discharged per minute.	Length of Stroke.	PRICE.
No. 0	2½ in.	1¼ in.	200	4	4	$130 00
" 1	4 "	2 "	180	20	5	200 00
" 2	5 "	2½ "	160	45	6	275 00
" 3	7 "	3¼ "	140	85	7	375 00
" 4	9 "	5 "	110	150	8	525 00
" 5	12 "	7 "	90	275	8	625 00

Other sizes of pumps made to order at the shortest notice.
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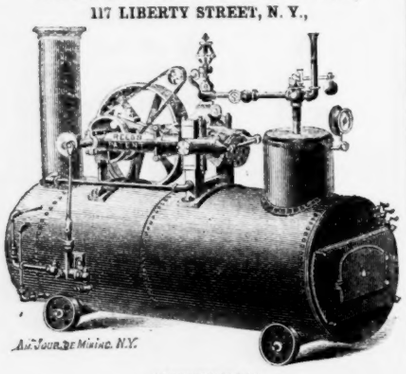

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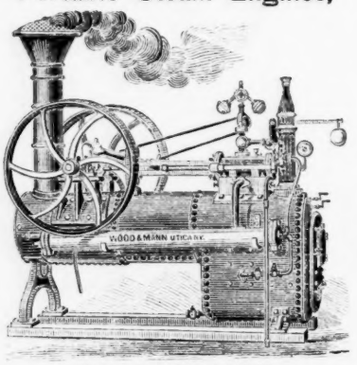

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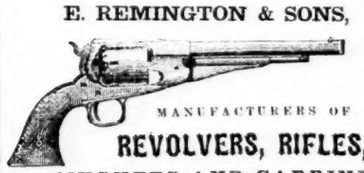

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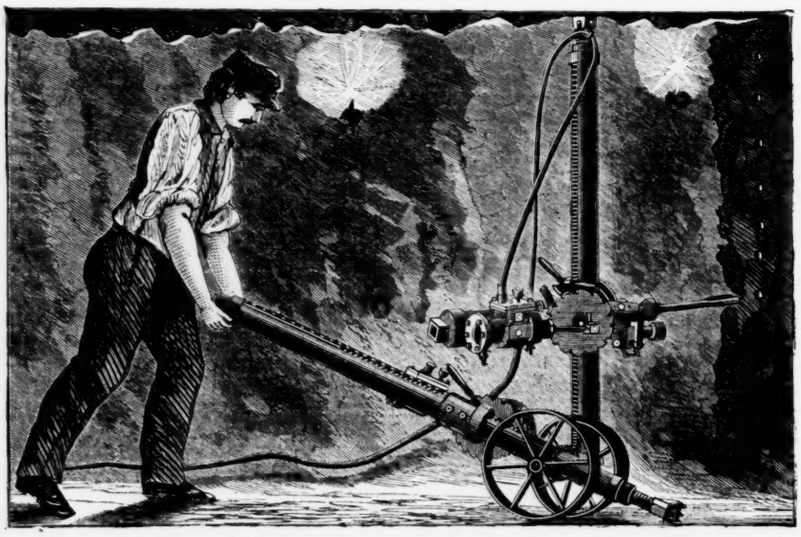

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NEW YORK, March 23, 1866.

MR. G. A. GARDNER, Secretary N. Y. Rock Drill Co.

DEAR SIR: Respecting the "Gardner Drill," I would say, we used it with perfect success on the Niagara Falls Canal. When we first worked it, we drilled in the solid limestone, holes of the diameter of six inches, at the rate of eighteen inches deep, in twenty minutes.

We used it for several months on the regular work, and found it more economical and effective than any other drill we have ever used. The rock is the hardest kind of blue limestone, with occasional boulders of quartz imbedded in it. You are at liberty to refer parties to me who may desire more particulars.

S. M. ALLEN,
Late President of Niagara Falls Water Power Company

This cut represents a section of a mining tunnel, or *drift*, 6x4½ feet, with two Drilling Engines; one driven by *compressed air*, drilling horizontal holes, the other being moved by the Engineer to its position on a pair of wheels *temporarily* attached to its supporting column; three of these columns, with two machines on each, may be worked in a drift of this size, producing as much working effect as fully seventy-five men. A drift of this size through solid rock (Granite for example) can be thus driven ten lineal feet every 24 hours.

These machines are very compact, measuring—independent of supporting column, etc.—30 inches in length by 12 inches breadth and depth, and weighing only 250 lbs. One man can move and adjust them to the work. The supporting column is held firmly in place by setting out the jack-screw, thus bracing it between the top and bottom of tunnel, or the sides of shaft, and the machines are raised and lowered by a gear working in the rack on side of column, while the attachments to the column form a *universal joint* and allow the machines to work *at any angle*. They are automatic; one engineer can attend to a gang of four or six, working on the same face. Six of them can be worked in a heading four and a half by six feet; and in a shaft six by twelve feet, eight of them can be worked at once. In a railroad, or other large tunnel, an increased number of machines can be operated, being supported and moved upon a carriage running on rails. The blow is struck by the drill being projected by the reactive force of an india rubber spring, against the rock, the drill being as free from the working machinery at the instant of striking, as an arrow shot from a bow; 300 blows per minute can be given with the utmost force the steel-drill point can bear. The cross-head to which the drill is attached is drawn back; (thus compressing the spring) by a cam rotated directly by the piston rod of an oscillating cylinder, the drill point has an automatic turning motion, and the entire machine an automatic feed, *self-regulating*, according to the varying hardness of the rock; the machine working equally well with the same adjustment when drilling on flint, or on granite cutting two inches deep per minute, or on micaslate, sandstone, or other softer rocks, cutting four and six inches per minute. They drill equally well at any angle, and with them holes can be put in the most difficult places with great facility.

Machines for open cuts have been worked for several years on railroad and canal excavations, operated by four-horse engines drilling four, six and eight-inch diameter holes, and doing the work of fifty men. Rock-Drilling can be done with these machines for one-tenth the cost of hand labor, and in one-tenth the time. We are prepared to furnish machines with *gangs of drills* for splitting granite, marble, etc.; *channelling machines* for marble, etc., when blasting is to be avoided; also machines for cutting the "BEARING IN" in Bituminous Coal Mines: we also manufacture the GARDNER PATENT DRILL POINTS, especially desirable for sinking oil wells; making round holes, requiring no reaming, and cutting faster than any other point. 2-tf

A SAFE STEAM BOILER.

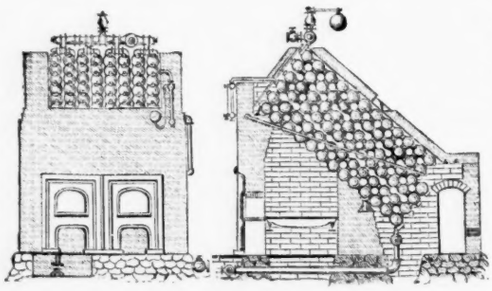
THE HARRISON BOILER.

This New Steam Generator combines essential advantages IN ABSOLUTE SAFETY FROM EXPLOSION, in first cost and cost of repairs, durability, economy of fuel, facility of cleaning and transportation, not possessed by any other boiler.

It is formed of a combination of cast iron hollow spheres—each eight inches in external diameter, and three-eighths of an inch thick, connected by curved necks. These spheres are held together by wrought iron bolts with caps at the ends. The form is the strongest known; its strength to resist internal pressure very great—unweakened as it is by punching or riveting, which lessens the strength of the wrought iron boiler plate about forty per cent. Every boiler is tested by hydraulic pressure at 300 pounds to the square inch.

IT CANNOT BE BURST UNDER ANY PRACTICABLE STEAM PRESSURE.

Under pressure which might cause rupture in ordinary boilers, every joint in this becomes a safety valve. No other steam generator possesses this property of relief, under extreme pressure without injury to itself, and thus preventing disaster.



IT IS NOT SERIOUSLY AFFECTED BY CORROSION, which soon destroys the wrought iron boiler. Most explosions occur from this cause. It has economy in fuel, equal to the best boilers, arising from the large extent and nearness to the fire of its heating surface, as also from the waved line of this surface, which, thoroughly mixing the gases, induces better combustion, and, breaking the flame, causes the heat to be more effectually absorbed than in the ordinary tubular or cylinder boiler.

IT GETS UP STEAM QUICKLY, and with little fuel. It produces superheated steam without separate apparatus, and is not liable to priming or foaming.

IT IS EASILY TRANSPORTED, and may be taken apart so that no piece need weigh more than eighty pounds. In difficult places of access, the largest boiler may be put through an opening one foot square.

IN THIS FACILITY OF TRANSPORTATION IT IS WITHOUT A RIVAL FOR REMOTE MINING DISTRICTS.

IT IS READILY CLEANED INSIDE AND OUT. Under ordinary circumstances it is kept free from permanent deposit by blowing the water entirely out under full pressure once a week. It requires no special skill in its management. Injured parts can be renewed with great facility, as they are uniform in shape and size. When renewed the entire boiler remains as good as new.

A boiler can be increased to any extent by simply adding to its width, and being the multiplication of a single form, its strength remains the same for all sizes. It has less weight and takes less than one-half the ground area of the ordinary cylinder boiler.

ANY KIND OF FUEL MAY BE USED UNDER THIS BOILER, from the most expensive, to refuse coal dust.

For descriptive circulars and prices, apply to

JOSEPH HARRISON, JR., Harrison's Boiler Works, Gray's Ferry Road, adjoining U. S. Arsenal, Philadelphia, Pa.